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EDITED BY
W J BUCHANAN, C I E , B A , M D , D P H (Dub), Lieut-Colonel, I M S

ASSOCIATE EDITOR
W E JENNINGS, M D , Lt -Colonel, I M S

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Original Articles.

SURGEON GENERAL JAMES ELLIS

BY D G CRAWFORD,

LIEUTENANT COLONEL (retired list),

Bengal Medical Service

ONE of the most striking figures in the early history of the Bengal Medical Service is James Ellis, the third officer in that Presidency to bear the title of Surgeon-General, the first Physician-General, and first President of the Medical Board

James Ellis went out to India in 1758 as Surgeon of the *Streatham*. That vessel was lost in the Bay of Bengal. Ellis reached Calcutta, and was appointed a Surgeon's mate or Assistant Surgeon on 1st November 1759. He was sent on active service at once, and spent the next three years in jungle fighting in the tracts which are now the districts of Midnapur, Burdwan, and Birbhum. He seems to have taken kindly to military life, for, a year after he joined, in November 1760, he was granted a Commission as Ensign by Henry Vansittart, the Governor of Bengal, who had been nominated as his successor by Clive. Pending Vansittart's arrival from Madras, John Zephaniah Holwell, a former member of the Medical Service, took over charge from Clive, who went home in January 1760, and acted as Governor for just six months, from 28th January to 27th July 1760.

Ellis was thus one of the few members of the I M S, who for some time held a "double commission," i.e., a commission as a combatant officer in addition to his warrant as Assistant Surgeon. He was extremely fortunate in his promotion, for he was appointed a full Surgeon by Vansittart in October 1761. According to the rules then in force, an officer who had received a combatant commission as well as a medical warrant could hold the two together only as long as he remained in the rank of Subaltern. When his turn came for promotion, either to Surgeon or to Captain, he had to make up his mind in which branch of the army he would remain, either to retain his combatant commission and quit the medical department, or to remain permanently in the latter, resigning his commission as Ensign or Lieutenant. Most of the officers who held a double commission in this manner elected to remain in the medical service, a few, notably Archibald Swinton and Archibald Keir, preferred to continue to serve in the combatant ranks. Ellis appears to have been the only one who had to make his choice while still an Ensign. The others had all reached the rank of Lieutenant, and were fairly senior in that rank, before they had to make their decision.

Ellis, however, was so fortunate as to reach the rank of full Surgeon with only two years' service, a rank for which many Assistant Surgeons

had to wait twelve, some nearly twenty years. It would probably have taken him several years, possibly ten or twelve, to get his company as a combatant, so naturally he chose to accept promotion in the medical department, and resigned his commission as Ensign. He remained in the army, however, as a military Surgeon, for two years more, and, as an Army Surgeon, served in the Bihar war of 1763, under Major Adams, against Qasim Ali Khan, the Nawab of Bengal. Adams defeated the Nawab's forces in three decisive actions, at Katwa on 19th July, at Gharia on 2nd August, and at Undwa Nala, East of Rajmahal, on 5th September. Ellis was present, and was the senior medical officer present, at the actions of Gharia, which he calls Sooty (Suti and Gharia are close together, both are in the north-west corner of Murshidabad district), and of Undwa Nala. After the latter he served in the Khargpur jungles, now in Monghyr district, and at the siege and capture of Monghyr, the Nawab's capital. He does not appear to have been present at the capture of Patna, which ended the war, and drove Qasim Ali a fugitive into Upper India, but remained at Monghyr, in charge of a General Hospital established there, which was transferred to Patna after the capture of that city, Ellis going with it. It is hardly likely that Ellis was the only medical officer with Adams' force, indeed he himself says he was the Senior Surgeon of that force, which implies the presence of juniors. But he is the only one whose name is recorded as serving in the campaign, and that only by the accident of the preservation by Orme of his memorial, given below.

In the previous fighting, and in the Patna massacre, perished some sixty-five officers, of whom sixteen were Civilians, including two members of Council, William Ellis and William Hay at Patna, and a third, Peter Amyat, previously killed at Murshidabad, six were medical officers, and the remainder combatants, Captains and Subalterns, William Fullerton, Surgeon of Patna Residency, being the only officer, civil or military, of the force previously in Bihar, who escaped with his life. The medical officers who fell were Head Surgeon Clement Crooke, who had accompanied Hay and Amyat from Calcutta, Surgeons William Anderson, Peter Campbell, Henry Harlan or Harling, and Smith, the last called a Swiss, though the name sounds English enough. Perhaps his name was really Schmidt. Harlan's career, as Surgeon, Subaltern of Artillery, deserter to the Marathas, and finally Surgeon again, is one of interest. "But that is another story." These five were all killed in the Patna massacre. The sixth, John Ham, Surgeon of Kasimbazar factory, had died previously as a prisoner at Monghyr.

Crooke was second Surgeon of Calcutta, and his death left that post vacant. The Fort William Consultations of 9th November 1763 note that the appointment is to be offered in succession to Doctors Francis Russell of Dakka, William

Fullerton of Patna, and John Davidson of Chittagong, and state that any officer who declines the post now will be considered to have resigned all claim to it in the future All three declined the appointment, preferring to remain in their mofussil stations Fullerton had already held the post for ten years, during which he had served in the siege of Calcutta in June 1756, and at its recapture in January 1757 He was on duty on boardship at the time of the final surrender, so escaped the Black Hole He finally resigned the service in March 1766 Russell remained at Dakka for another twelve years, he resigned on 24th February 1775, and died at Bath on 5th August 1791 Davidson, in spite of the above orders, came to Calcutta later on, in May 1766 He resigned on 11th January 1768, and was still living in retirement near Edinburgh in 1792 When he retired, Daniel Campbell was transferred from Kasimbazar to succeed him in Calcutta

The Fort William *Consultations* of 25th November 1763 record that, Russell, Fullerton and Davidson having all declined the post, Ellis is appointed one of the Head Surgeons in Calcutta The Presidency Surgeons in Calcutta, two in number up to 12th April 1763, and four after that date, were called Head Surgeons, and the senior had some authority over the other members of the service, but his administrative powers were vague and ill defined, until the appointment of a controlling officer with the title of Surgeon-General The institution of this post was recommended by General Richard Smith on 8th November 1769, and reported to Court, as carried out, in para 57 of a Fort William General Letter, dated 25th January 1770 (*Abstracts, Letters from Bengal, Vol I, 1760-1770*, page 403)

"Surgeon-General to the Army appointed at the recommendation of General Smith, 8th November Mr James Anderson appointed at ten shillings a day"

The Christian name, James, is a clerical error The officer appointed was Thomas Anderson, the Senior Military Surgeon The salary of ten shillings a day was in addition to his regular pay and allowances as Surgeon

Thus Ellis attained the post of Head Surgeon with only four years' service He says himself, in his second memorial, given below, that he became first Surgeon in July 1765 But his memory here seems to have been in fault, for a General Letter from Fort William, dated 12th February 1771, states in para 88 (*Abstracts, Letters from Bengal, Vol II, 1770-1774*, page 70).

"First Surgeon Mr John Taylor has resigned, and proceeds to Europe on the Worcester, and is succeeded by Mr James Ellis."

Taylor had joined the Madras Service in 1748 or 1749, had been transferred to Bengal from 4th January 1754, and had held the appointment of Surgeon at Calcutta since June 1760, when he had been transferred from the army For the ten years previous to 1760, George Grey and William Fullerton had been first and second

Surgeons respectively in Calcutta Gray resigned and went home in March 1760, Fullerton resigned the Calcutta appointment about the same time, to take up that of Surgeon to the Patna Residency, and went home on leave soon after Tyso Saul Hancock and John Taylor were appointed in their places Hancock resigned the service on account of failing eyesight on 23rd March 1761 He was afterwards re-appointed to the service on 25th November 1770 as "Supernumerary Surgeon, not to rise," and died in Calcutta on 5th November 1775 He was an intimate personal friend of Warren Hastings On Hancock's resignation William Plenderleath, Surgeon of Kasimbazar factory, succeeded him Plenderleath was drowned in the Hughli early in 1762, when Clement Crooke was transferred from Chittagong to succeed him, and Davidson from military employ to Chittagong Possibly Ellis, who was second Surgeon, may have acted for a time in 1765 as first Surgeon

Ellis had risen to be head of the Civil branch of the service with little over eleven years' service He had, however, no authority over the medical officers in military employ, Surgeon-General Anderson being the head of that branch Ellis retained the post of First Surgeon for little over two years Two General Letters from Fort William, dated 1st March 1773 and 15th March 1774, report his resignation, the appointment of Campbell to succeed him, and his departure for England (*Abstracts, Letters from Bengal, Vol II, 1770-74*, pages 240 and 350)

"Letter of 1st March 1773, para 53 Senior Surgeon Mr Daniel Campbell succeeded on Mr Ellis's resignation, have found it necessary to unite the two Departments of Civil and Military Surgeons, which will put them on a more equitable footing and prevent jealousies"

Letter of 15th March 1774, paragraph 108—"Mr James Ellis, your late Chief Surgeon, takes passage by this ship"

Ellis seems to have spent a year in Calcutta, after his resignation, settling up his private affairs Probably, like most of the Company's servants, he was extensively engaged in private trade He left Calcutta in the *Resolution*, the ship which carried the letter of 15th March 1774 So he returned home after sixteen years' absence No doubt the other members of the service congratulated themselves on getting a step, and thought that they had seen the last of Ellis. But there they were wrong

As stated in the extract above, Daniel Campbell succeeded Ellis as head of the Civil branch of the service in February 1773, and at the same time he seems to have become Military Surgeon-General also, the two branches of the service, military and civil, which had been separated for some seven years, being again combined Campbell seems to have been employed entirely on the civil side, and to have done little if any military duty till his appointment as Surgeon-General Whether Anderson resigned that post in 1773, or whether he was superseded by Campbell, is not clear He died at Bombay in March 1777

Campbell held the post of Surgeon-General and First Surgeon for over ten years, resigning in 1783. His resignation did not, however, give a step to the service, and the officer next in rank to him, Andrew Williams, was disappointed in his hopes of succeeding to the appointment. A General Letter from Court, dated 15th January 1783, in para 16 states (*Abstracts, Despatches to Bengal*, Vol I, 1753-1785)

"Mr James Ellis proceeds to his Station of Second Surgeon on your Establishment p Barwell"

On his arrival he took up the post of Second Surgeon, and succeeded Campbell as Surgeon-General a month later. These facts are reported in two Public Letters from Bengal, dated 23rd October and 30th November 1783 (*Abstracts, Letters from Bengal*, Vol IV, 1783-1789)

Letter of 23rd October 1783, para 48 — "Mr James Ellis, Second Surgeon, admitted to the Station assigned him"

Letter of 30th November 1783, para 33 — "Doctor Daniel Campbell, Surgeon-General, has resigned the Service, and proceeds to Europe p Worcester. Petitions from the Inhabitants and Surgeons in testimony of his merit, and requesting us to convey to you their wishes that he may be permitted to return to his Station. We unite our request to the same effect. Copies of the Petitions transmitted."

Ellis on this occasion held the post of head of the service for first six years. The most noteworthy event of his tenure of office was the appointment of the Medical Board, which was instituted in obedience to a letter from Court, dated 21st September 1785. The formation of the Board is recorded in Bengal *Minutes of Council* of 22nd May 1786, and in a G O of 8th June 1786. It held its first meeting on 29th May. Ellis became President, with the title of Physician-General and a salary of £2,500 a year, Andrew Williams was appointed second member, with the title of Chief Surgeon and a salary of £2,000, the Head Surgeon of the Presidency General Hospital, John Fleming, became *ex-officio* third or junior member, with a salary of £1,500, superseding many of his seniors. The Surgeon Majors of Brigades, under the new scheme of medical administration, became Head Surgeons of General Hospitals.

Under the Cornwallis regulations of 1788, the title of Physician-General was abolished (to be revived some half century later), and the Senior Member of the Board called simply the President.

Ellis resigned on 24th December 1789, and died on board the *Burbridge* on his way home.

Campbell soon tired of being in England, and two years after he left India was on his way out again. A letter from Court, dated 27th January 1785, in para 23 notes that permission to return was given him (*Abstracts, Despatches to Bengal*, Vol I, 1753-1785)

"Surgeon General Campbell permitted to return to his Station"

He did not live to reach India. The *Calcutta Gazette* of 29th September 1785 records his death,

on the way out, at Johanna. This is one of the Comoro Islands, between the north end of Madagascar, and the mainland of Africa, a place at which outward bound Indiamen frequently called to replenish their stores of food and water.

Andrew Williams originally came out to India as Surgeon of a King's Regiment. The Fort William *Consultations* of 21st December 1767 contain a petition from him asking for civil employment, in which he states that he joined the Bengal Medical Service, at the request of Vansittart, then Governor, in 1760, quitting the King's Regiment to which he belonged, when it went home. His petition was refused, on the ground that his application was too late, and in military employ he remained throughout his service, chiefly in the first Brigade. He was appointed Surgeon-Major when that rank was instituted, a General Letter from Fort Wilham, dated 16th February 1784, reports in para 14 that he had been granted the rank and allowances of a Lieutenant-Colonel. As stated above, on the institution of the Medical Board he was appointed second member. In the following year he applied for three years leave home, in a memorial entered in the *Proceedings* of the Medical Board of 21st July 1787, he states that he joined in 1760, had spent twenty-seven years in the country, and had been disappointed in his hopes of succeeding to the post of Surgeon-General by the return of Ellis from England in 1783. A Fort William General Letter of 15th December 1778 states in para 37 (*Abstracts, Letters from Bengal*, Vol IV, 1783-1789)

"Mr Andrew Williams, Chief Surgeon, permitted to resign and return to Europe on the *Thetis*, recommended for leave to return"

Three years later he was at last appointed, on paper, to the post of President of the Medical Board, by the Court of Directors, as announced in a Military Letter to Bengal of 6th May 1791 (*Abstracts, Despatches to Bengal*, Vol II, 1785-1797)

Para 61 — "Surgeon Mr Andrew Williams permitted to return to his Rank as Senior Surgeon. He is to take his Seat as President at the Medical Board, on the first vacancy after his arrival, meanwhile to be employed wherever an opportunity shall offer"

Para 67 — "Senior Surgeon Mr Andrew Williams has leave to remain till next season"

Taking warning, however, by the fate of his predecessors, Ellis and Campbell, both of whom had died in harness, Williams never returned to India to take up the appointment.

Among the *Orme manuscripts* (*Orme, Various*, Vol 197, pages 13 to 18), are preserved two memorials, undated, but from their contents written not earlier than 1774, from James Ellis, setting forth his services from 1759 to 1774. These memorials are written on foolscap paper, folded longitudinally down the middle. That on the left hand side is written in a small cramped hand,

rather difficult to read, and is full of erasures and corrections. That on the right hand side is written in a clear legible hand, it is also considerably longer and fuller than the first, so cannot be called a fair copy thereof, though the contents of the two are, on the whole, much the same. Apparently the first is a draft, written by Ellis himself, the second was probably written by a clerk or secretary, under the direction of Ellis.

FIRST, OR LEFT HAND, MEMORIAL

Your memorialist James Ellis went out as Assistant Surgeon to India in the *Streatham* in the year 1758, and arrived in Bengal in November 1759, just before the Dutch troubles,(1) and on the loss of the *Streatham* was taken into the Company's Service in the line of Surgeons, by Doctors Grey and Fullerton and soon after ordered to Cossimbazar, from whence he joined the detachment proceeding to Midnapur, against the Phousdar of that province(2) under Major Martin White in January 1760. This campaign was active and sharp, and the conduct of your memorialist was satisfying to the commander, on whose recommendation without the previous knowledge of your memorialist, Governor Vansittart gave him an Ensign's Commission, which your memorialist, by the Company's rules, resigned on his return to Calcutta in December, and was then appointed by Governor Vansittart a full Surgeon, after which he was sent to serve with the Detachment stationed in the Midnapur districts under the command of Major Knox, with which he remained two years, and proceeded with it to join Major Adams marching with the army against Cossim Ally Khan, and served through the campaign until the entire defeat of Cossim Ally Caun(3) at Sooty, when your memorialist proceeded with the detachment sent against the enemy's horse under M T C (4) in the Carrickpoor(5) Jungles. This expedition having succeeded, your memorialist served through the Siege of Monghyr under Major Knox, which Major Adams covered with the army. After the reduction of this place, your memorialist (took charge of the General Hospital which was established there and had in consequence of the several preceding actions 400 Europeans under his care. From Monghyr he then proceeded with the Army)(6) After the taking of Patna your memorialist was ordered to rejoin the army, and continued with it in the field until—(7) when he was recalled to Calcutta to succeed to the office of First Surgeon on the Bengal Establishment, in which station of no little trust and concern Your Memorialist continued 9 years until the year 1773. Your Memorialist on no other occasion than the present could be induced to say that he flatters himself, his conduct during these 15 years whether as an Officer and in Services of the field, in the Line of his profession through all its stages, in the character of a Citizen and an Inhabitant of the Colony, met with the approbation of all the Gentlemen under whom he had the honour to serve, or with whom to be connected, and that his character will be vouched to Inquiry, by General Calliaud, Mr Sumner, Mr Verelst, Cartier, General R Smith, General Sir R B (8) Laurel,(9) Lushington, Vansittart

SECOND, OR RIGHT HAND, MEMORIAL

I James Ellis went out as Assistant Surgeon to India in the year 1758, and arrived at Calcutta just before the Dutch troubles—in 9bro (59)—from whence I was order'd to Cossimbazar—where I Remained only a few months, whence I was order'd to Calcutta to join the Detachment, then under orders to proceed to Midnapore, against Missery Kawn, Phousdar of that Province, under the Command of Majr Martin White in January (60). From thence we march'd to Burdwan—that Rajah being join'd by Missery Kawn—both Retreated—after a defeat—to ye Jungles and Krishnagur in the Beerboon Province—but Reciev'd Orders to halt at Suree the Entrance of ye Jungles, which leads to Beerboon—where we Remain'd some time. The Junction of Shubut with the Burdwan and Midnapore Rajah's, Elated them so much—and with an addition of 9 Guns, worked by Europeans—that our Camp was Disturb'd daily by some of their horse Krishnagur was not above 8 coss from us—which determin'd Majr White to attack them—which was done even without the consent of Majr York, under whose Orders we were—We march'd off our Ground with our whole detachment, consisting only of 60 Europeans, about 400 Seapoys, and two six-Pounders—and Encamp'd in the evening within 2 coss of

them Majr White wish'd to have attack'd them in the night—the Party were in Sight of our Enemy but at near 7 o'clock in ye Morning, owing to very bad Roads—and by Mistake or Ignorance of ye Harcarrahs—Led thro' very Scampy Paddy fields—their Artillery from an Old Mud Fort hurt us much while we were marching up to them—tho' on ye Skirts of a Jungle From whence also we were Gaul'd—tho' Paddy fields—so heavy—that we were oblig'd to quit one Tumbrill till we had drove the Enemy from their Guns. The Tumbrill was plunder'd and all our Baggage Lost Our Line was weaken'd by half of the Seapoys being order'd to ye skirt of ye Jungles to Prevent the fire from ye Matchlock and Seapoys—which the horse observing attack'd our Line, some Lascars, Coolies, and a few Seapoys were killed and one European wounded, they almost destroy'd ye Tumbrill Left, and Burnt everything they could not carry off Before we were in a Situation of Returning to bring ye Tumbrill away, which was not until 3 in the afternoon—Just before sun sett—the whole of the Enemy appear'd again seemingly Determin'd to attack us in their turn Their foot with their Seapoys Regularly drawn up Advanc'd towards us, to the Fort—while their Horse wheel'd round thro' ye jungle to Attack our Reir—which, was Prevented by all the Seapoys Marching Round to meet them on ye other side of the fort A few Rounds from our Guns soon dispers'd the foot—but the Horse remain'd firm—but did not advance to do any hurt Just at this time Majr York's evening Gun was heard—when the whole of the Horse join'd the foot and went off—Majr York had heard ye Commencement of our Cannonade—and had the account, of our having march'd off for Krishnagur Immediately struck his tents and March'd from Beerboon to our Assistance The Harcarrahs from him came with advice that he should join us early in the Morning—and Lucky it was so, or we might have been distress'd, tho' in a very good Station The Old Mud Fort—We had very little Ammunition left—nor any Provisions, Liquors, or Cloths But a few Bags of Rice were Pick'd up in their Bazar—which was Litterally what we, as well as yo men had to eat—untill we were furnish'd by Majr York—Majr York's Party—was near 200 Europeans, Guns and Seapoys in Proportion—We were order'd Immediately, after ye Rajah of Burdwan, who had retr'd to some of his strongholds in the Jungles From whence we drove him—A few days after we return'd to our Station at Suree, where we Remain'd till the rains sett in—When we were Order'd to Burdwan—Where we found Mr Sumner, Chief of the province After our Return to Suree Majr White presented me with a Commission in the Army from Mr Vansittart, and shew'd me his letter to him Informing him, I could not hold both Employments, after my Return to the Presidency, which was in 9bre (60) When at the Intreaties of my Friends—after doing Duty in the Garrison for some time, I Resign'd my Commission, in consequence of Mr Vansittart's appointing me a full Surgeon to ye Army, and to join Majr Knox's Party at Jellipore in ye Midnapore Districts—Where we remain'd untill the Army took the Field against Cossim Ally Kawn in (63) Under the Commands of Major Adams—When I was Senior Surgeon, after the Affairo of Sooty—and the taking the Works at Woodah Nullah Before our arrival at Mongheer—Majr Knox was order'd with ye greatest part of two Battalions of Seapoys—and two three Pounders to Disperse a Large Body of Mogul horse, under the Command of Mahammed Tuckey Kawn, in the Carrickpore Jungles—he Desir'd I might be order'd on the expedition but Before we March'd off our Ground The Majr was taken ill—and Capt Wm Smith was Order'd to the Command—we effected the orders by a very long Marche of 8 hours and by attacking them by Surprize—it fully answer'd every Purport of Majr Adams As the siege of Mongheer could not well be carried on, while so large a body of good horse were in our Rear On our Return to ye camp—then in sight of ye Fort Majr Knox was Order'd to ye Command of ye Siege of that Place Where I was appointed—and acted on this occasion, as well as on all Others when I could be of Service—to many Gentlemen I can appeal, who were on ye Spot and are now here—after the Reduction of this Place Majr Adams order'd me to the charge of the General Hospital form'd at Mongheer, our Sick and Wounded were near 400 The Recovery of the Major Part of these men—it was Remov'd after the taking of Patna—to that place—from whence, I again rejoin'd ye Army, and Remain'd untill I was recall'd to ye Presidency to succeed to ye Appointment of first Surgeon in July (65) where I remain'd untill I Quitted India in March (74)

REFERENCES

- (1) The war with the Dutch in 1759, including the battle of Biderra fought on 25th November 1759
- (2) Misri Khan
- (3) The spellings Khan and Caun are as the original
- (4) Muhammed Taki Khan
- (5) Khaikpur or Khargpur, in Monghir district
- (6) Words in brackets struck out in original
- (7) Date left blank in original
- (8) Sir Robert Barker
- (9) This name is hard to read, it looks like Lauiel, but I know of no man of prominence in Bengal of that name

NOTE ON AMBULANCE TRANSPORT IN
VERY DIFFICULT MOUNTAINOUS
COUNTRY

BY R. KENNEDY,
CAPTAIN, I.M.S.

This note is founded on six and a half months experience as Medical Officer with the Debong Survey and Exploration Party in the Mishmi Hills on the North East Frontier of India during the cold weather of 1912-13

Nature of Expedition, etc—Complete exploration and survey of the catchment area of the Debong River was, practically speaking, the object of our little party, which comprised, in all, 9 British officers, including myself, 300 N.C.O.'s and men of the Naga Hills and Lushai Hills Military Police Battalions, 5 Sub-Assistant Surgeons, and some 1,200 Naga and Paharia coolies.

We relied solely on the coolies mentioned above for transport of all kinds

Nature of Country traversed—We had in all some 400—500 miles of lines of communication to look after during the survey operations, which were very extensive. Roads, in the ordinary sense of the term, did not exist, their place was taken by Mishmi paths, which are nothing more than glorified game tracks. A glance at photo No 1 will, perhaps, give some idea of the nature of the country which is composed of tumbled masses of jungle clad mountain peaks, spurs and ridges, many of them so steep that one wonders they don't collapse. Indeed many of the hillsides are only held together by the inter-twining roots of the jungle which is very dense. Between the ridges are valleys with sides rising practically sheer for 1,500—3,000 ft. Torrents of various size tumble through the gorges on their way to join the Debong.

The Mishmis have long ago learnt that it is impracticable to run a path round a spur in such a country, not only on account of the difficulty of gaining a footing on the precipitous slope, but also because of the danger of land-slides. Consequently, all the paths run straight across the ridges and gorges—the slope frequently being alarmingly steep. An average day's march was anything from 5—10 miles and entailed an ascent and descent of 3,000—4,000 ft. The rivers are crossed by—(1) rough bridges made by throwing a few saplings or bamboos across in the case of small streams,

(2) suspension bridges cleverly constructed of cane, and (3) rough trestle bridges, which sometimes span the rivers in their upper reaches, where the valleys tend to open out somewhat, but even there such bridges are only possible in the middle of the cold weather. Photos. Nos II and III are of one of the suspension bridges mentioned above. These bridges really form one of the most striking features of the Mishmi country. They are made entirely of cane cut in the neighbouring jungle, are extremely narrow, the footway only accommodating one foot at a time, and are sometimes as long as 120 yards. They are wonderfully free from "sag" and really sway very little. I have often seen five or six loaded coolies on such a bridge at one time.

Forms of Ambulance Transport used.—The difficulties of ambulance transport in a country such as I have endeavoured to shortly describe above were, needless to say, considerable. The ordinary "dandi" even had we had bearers to carry it, would have been useless, as its depth precludes its use on a really steep slope, and its width would cause it to jam in the suspension bridges, furthermore, it is of considerable weight where every pound counts. The Field Service stretcher is not suitable for carrying patients long distances, more especially in hilly country, and it requires at least 4 men to carry a patient on it. We had no ambulance transport establishment, but utilised the coolies of the daily meeting convoys, to carry sick down the line when necessary. These meeting convoys carried rations, etc., up the line between posts and, of course, when proceeding down the line, ordinarily went empty.

The sick were carried in any one of the three following methods, according to circumstances—

(1) *Gulha method* used by Paharia coolies for carrying sick, who were able to sit up. Photo. No IV shows this method and explains itself. The patient sits on his blanket in the ordinary carrying sling with a brow band used by all Paharia coolies. Supported by the sling, he sits, as it were pick-a-back, on the carrier's back. Using this method two Paharia coolies can carry a patient of average weight a day's march.

(2) *The Naga method* used by the Naga coolies for carrying sick, who were able to sit up.

Photo No V illustrates this method. In a surprisingly short space of time the Naga coolies prepare the basket chair, which they call "tappa" from fresh cane. Each chair has a swinging foot piece as shown in photo. The patient sits in the chair and the carrying Naga adjusts his sling and carries the whole contrivance as though it were an ordinary load. The Naga carrying sling differs from the Paharia sling in having a wooden

yoke, which fits over the shoulders, as well as the brow band, and it is so adjusted that the coolie can, by throwing his head forward or backwards, take the major portion of the weight alternately on his brow band or shoulder yoke. In this way he manages to, in some measure, rest his muscles without stopping. Using this method two Naga coolies can carry a patient of average weight a day's march.

(3) *An improvised special "dandi"*—The above two methods are simple and most effective in hilly country, when it is not essential that the patient should be recumbent and when Paharia or Naga coolies are available as they probably always will be in Expeditions on the North-East Frontier of India. When, however, it is necessary that the patient must be carried in a recumbent position, some form of "dandi" or hammock must be used. In the majority of such cases, the Ashanti hammock leaves nothing to be desired, but it is obviously unsuitable for cases where it is essential that the main axis of the body and the lower extremities shall be kept in the same plane, e.g., fractured femur, etc. It was for a case of fractured femur that I first devised the "dandi" described below. We subsequently gave it a thorough trial and found it most satisfactory for such cases. It is something between the ordinary "dandi" and the Ashanti hammock, and is illustrated in photo No VI.

It consists of—

- (a) A stout bamboo pole.
- (b) A rigid, flat, "mattress," of inter-woven split bamboo, measuring 6ft by 2ft.

(c) A sling which can be made by opening out three "gunny" bags and stitching them together by their long sides as shown in the photo. Along either side of this sling 10-12 strong eyelet holes should be worked—there are only 6 in the "dandi" in the photo, but in practice this was found to be insufficient.

(d) A piece of thin, but strong rope, some 20" long.

Now, to "load" the "dandi," the sling is spread on the ground near the patient's bed, and the bamboo "mattress" is laid in the middle. The patient is gently lowered on to the "mattress," which has been covered with a doubled blanket, and is arranged as comfortable as possible. The pole is next held in position parallel to and close above the patient's body, while the sling is gathered up on either side and the rope is laced over the pole and through the eyelet holes in the edge of the sling. If the road to be traversed is very steep, the sling should be laced up in such a manner that the patient's body is very close to the pole, by adopting this precaution one can save the patient many a jar. Several tight turns of the rope should be taken round the pole at

either end to prevent the sling from sliding on the pole when on a steep slope. The whole can now be lifted and carried as shown in the illustration.

In the photograph, the sling is not hitched up close enough to the pole, and the rope has been made fast to the pole at one end only, further, since there were not enough eyelets in the edges of the sling, it was necessary to give the rope some turns under the sling in order to provide some extra support. Yet, the photograph which was taken before the "dandi" had been put to a practical test, shows the idea clearly enough.

The advantages of this form of "dandi" are—

- (a) Lightness
- (b) Even when being carried on extremely steep paths, the patient is not bumped and jarred, owing to his height from the ground
- (c) It can be carried across a very narrow suspension bridge

(d) It can be readily improvised.

On the flat, four bearers could easily carry a patient a day's march in this form of "dandi," yet in the Mishmi hills it gave eight men all they could do. On steep slopes a couple of men always went in front and, facing backwards with extended arms took the weight off the foremost bearer. In this way I saw patients lowered over what were nothing more or less than small cliffs. When a suspension bridge had to be crossed, the pole of the "dandi" was lightly bound by ropes to the chests of two bearers carrying it, so that, if they lost their balance and gripped the bridge with both hands, the pole would not slip off their shoulders. In addition to this precaution, one man crossed the bridge immediately in advance of the foremost bearer, and another man followed immediately behind the rearmost bearer, these men were ready to catch and support the pole at once, if the bearers lost their balance. In this way several long suspension bridges were negotiated without incident.

Conclusion—I do not suggest that this form of "dandi" should be stocked for service in the hills, because the Ashanti hammock is simpler and is eminently suitable for the majority of cases. For certain cases, however, the hammock is contraindicated, e.g., cases of fractured femur, septic knee-joint, etc., and it is for these cases that this form of "dandi" is so suitable in really bad country.

When required, it can readily be improvised. The bamboo pole can be obtained in the jungle, or the ordinary "dandi" or hammock pole can be used, the "mattress" can be made from ordinary pieces of wood from packing cases, etc., if green bamboo be not available, and the Commissariat will always oblige with a few empty "gunny" bags and a suitable piece of rope.

NOTE ON AMBULANCE TRANSPORT IN VERY DIFFICULT
MOUNTAINOUS COUNTRY

BY CAPTAIN R KENNEDY, I.M.S



PHOTO No. I

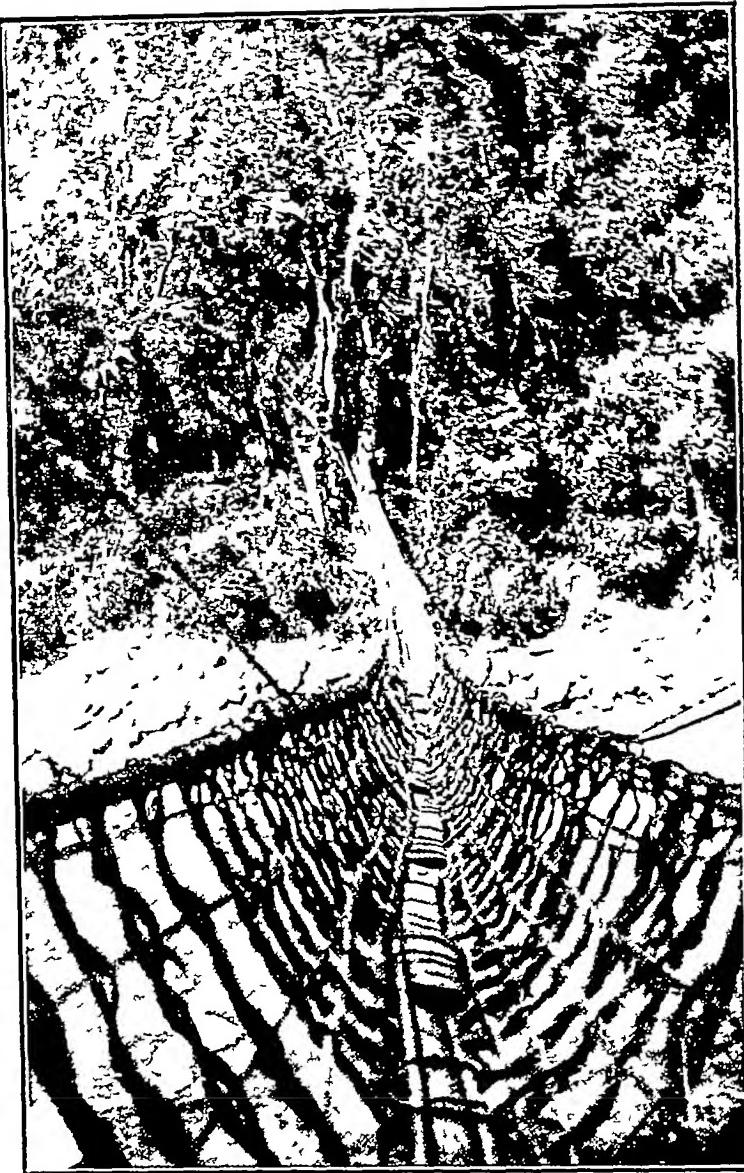


PHOTO No II

NOTE ON AMBULANCE TRANSPORT IN VERY DIFFICULT
MOUNTAINOUS COUNTRY

BY CAPTAIN R. KENNEDY, I.M.S.

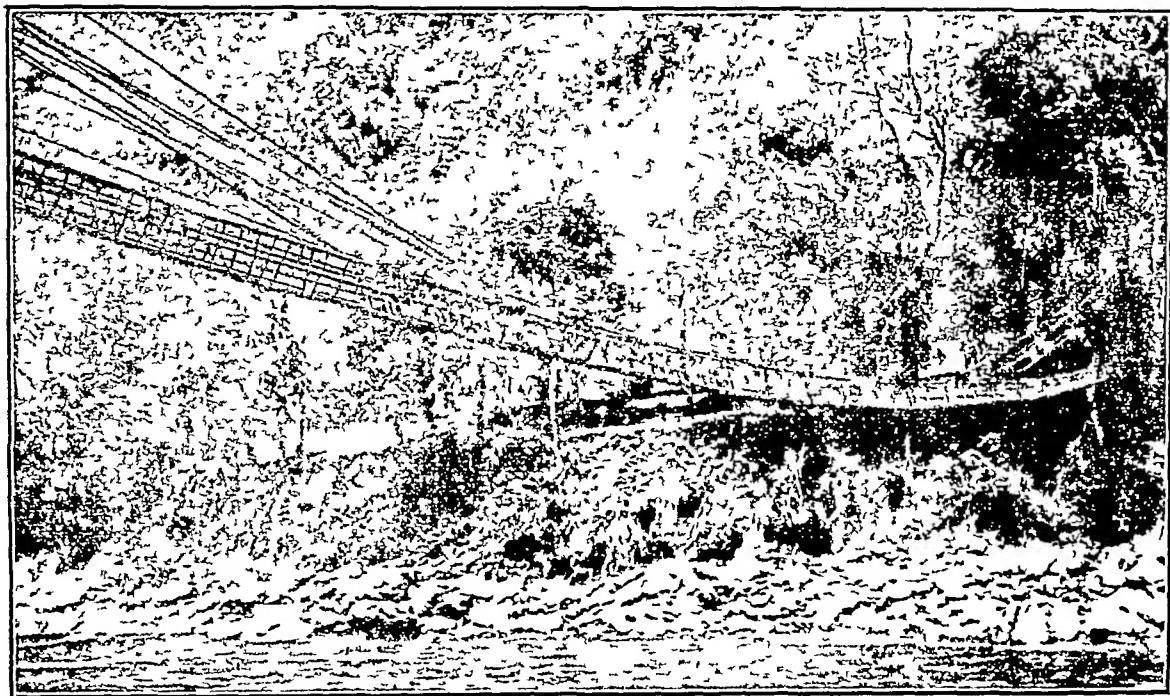


PHOTO No III

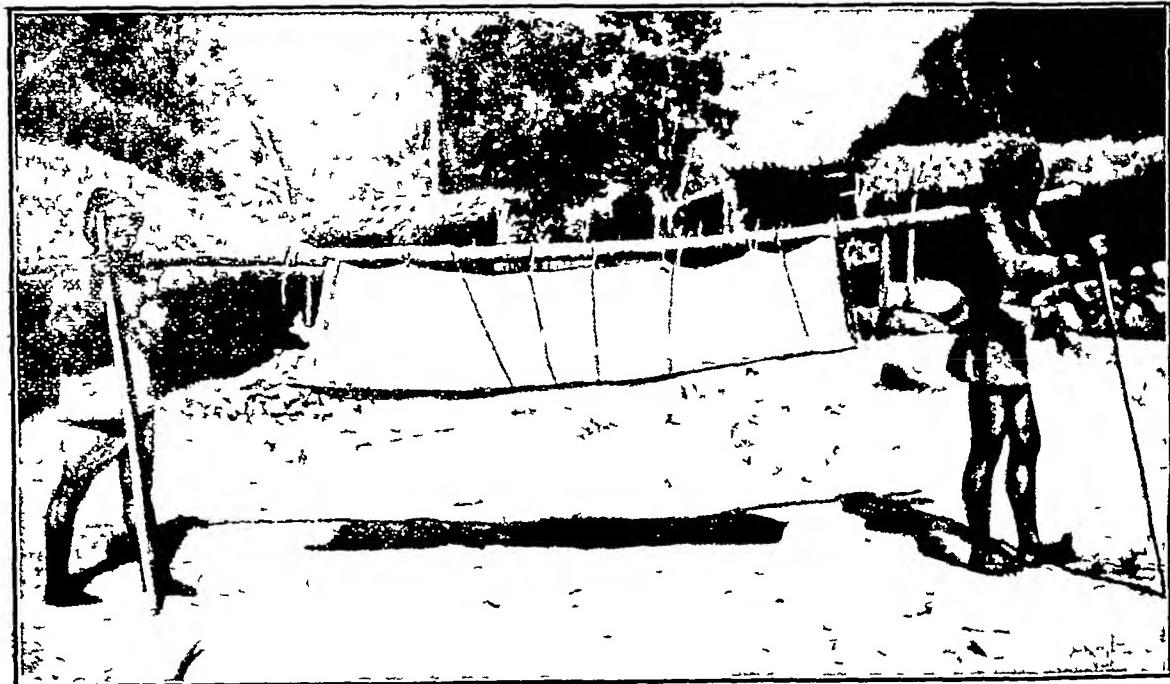


PHOTO No VI

NOTE ON AMBULANCE TRANSPORT IN VERY DIFFICULT MOUNTAINOUS COUNTRY

BY CAPTAIN R. KENNEDY, I.M.S.



PHOTO NO IV



PHOTO NO V

A USEFUL MODIFICATION IN EXTIRPATION OF THE LACRYMAL SAC

By F. P. MAYNARD, M.B., F.R.C.S.,
Lt. Col., I.M.S.,
Calcutta

MOST methods of removing the lacrymal sac follow closely the operation devised by Kuhnt and fully described by him in his classical monograph in the *Klinisches Jahrbuch* ("Ulber die Therapie der Conjunctivitis Granulosa" Von Dr. Med-Hermann Kuhnt, Vol VI, 1897) Kuhnt, who in 1888 had extirpated over 500 sacs by this method, gave Platner (1724), the credit of being the first to perform extirpation and says he combined it with a drilling through the os unguis into the nose so that the tears could escape into the nose This addition has recently again been advocated

In his method Kuhnt removed the sac through a curved incision dividing the palpebral ligament, by dissecting out the sac with scissors, beginning internally, leaving the periosteum, and then freeing the dome and outer side, finally cutting through the nasal duct below The method I have for some time adopted and consider an improvement on Kuhnt's is, after separating the sac on its inner side with the periosteum, to cut through the nasal duct as low down as possible and then with scissors to dissect the sac upwards, removing the upper domed end of it—the most difficult part of the sac to remove—last.

The operation is done under a general anaesthetic

Instruments required.—Rollet's two retractors and rugine, small sharp scalpel, straight blunt-pointed and sharp-pointed scissors, small Volkman's spoon, two pairs Spencer Well's artery forceps (fine pointed ends) two pairs fixation forceps, Bardsley's needle holder (or Galezowski's), curved suture needles and fine celluloid, silkworm gut or horse-hair sutures If Rollet's instruments are not available, Axenfeld's and Muller's retractors may be used or Volkman's but they are not so good and damage the tissues more.

Method—A curved incision is made one inch long, beginning a quarter of an inch above the internal palpebral ligament This is best defined and the incision, which should be down to the bone, most easily made, by an assistant drawing both lids outwards and the surgeon drawing the skin inwards towards the nose for the right eye and *vice versa* for the left eye

The incision should run a quarter of an inch internal to the inner canthus and should curve outwards below along the margin of the orbit Hæmorrhage is usually free and the angular artery may require seizing with a Spencer Well's forceps The edges of the wound are drawn apart by the

two Rollet's retractors and pressure applied with pledgets of cotton, soaked in adrenalin solution if necessary The rugine is next used and the sac turned outwards together with the periosteum which has been divided in the first incision The sac is followed down with scissors along its inner aspects into the beginning of the nasal duct, where this is cut across as low down as possible and the cut upper end grasped with fixation forceps By drawing this upwards and inwards the sac is cleared and the canalicular openings cut across, the fundus only remaining The internal palpebral ligament should have been divided in the first incision but if not the remainder of it can now be cut across and the fundus cleared—the sac coming out entire with its three openings (nasal duct and canaliculi) Bleeding is stopped by pressure—a hot probe is passed down the nasal duct through into the lower meatus—and the wound sewn up The first suture is at the level of the canthus and it is advisable to make the suture take up the skin on the nasal edge of the wound a little higher up than appears right, otherwise it may be found later on that the canthus is a bit below its proper level One stitch is generally needed above this central one and two or more below A graduated gauge pad is applied and both eyes bandaged One eye is left open after 3 or 4 days and the stitches taken out on the seventh day, the wound generally being healed by that time and very little scar visible

The advantage of this method is that the nasal duct end of the sac is easily found and, once found and divided, the sac is easily cleared upwards by scissors If any of the fundus is being left behind it becomes known at once by the scissors opening the sac—and the part so left can easily be removed There is no hunting under the tendo venti for the fundus as occurs when an attempt is made, quite unnecessarily, to preserve that structure In the hundreds of sac extirpations I have done, dividing it in nearly all, I have never known non-union of it to occur Some Surgeons attempt never to divide it, Col Elliot and Mr Harrison Butler particularly. The former however always cauterises the upper part of the wound with a ball shaped cautery, which is surely unnecessary unless some of the sac is likely to be left behind, sometimes inefficient if it is, and damaging to the tissues in either case

Another advantage is that the outer part of the sac is more easily separated from the tissues It is sometimes difficult to know how far away from the canthus the separation of the sac should be carried, and I have known button-holing to occur into the conjunctival sac, though never damage to the internal rectus as mentioned by Haab as having been seen by him in some one else's operation By dissecting out the sac from below upwards this difficulty is lessened

**A FEW OBSERVATIONS ON MYIASIS
(SCREW-WORM DISEASE)
IN BEHAR**

BY S D RIELEY,

MILITARY ASSISTANT SURGEON,

*Medical Officer, Agricultural Research Institute, Pusa, Behar,
with note on the fly*

BY MR F. M HOWLETT,

*Imperial Pathological Entomologist, A. R. Institute,
Pusa, Behar*

THIS interesting disease which is not altogether uncommon in the province of Behar appears to be clinically identical with that described by Manson as occurring in certain parts of America

The malady is the result of a Blue Bottle Fly (*Pycnosoma*) depositing its larvae in a slight abrasion of, or in the unbroken mucous membrane of, the nasal fossa of the patient. The larvae burrow into the delicate membrane, and feed on the underlying structures causing considerable destruction of tissues with occasionally severe constitutional symptoms. The patient on coming to hospital presents a characteristic appearance of having a diffused oedematous swelling about the upper portion of the face, more or less localised to the nose, eyes, lower part of the forehead and upper lip. The swelling about the eyes often being sufficient to reduce the palpebral fissures to mere slits, and thus impairs vision temporarily. The voice is nasal and breathing is mainly carried out through the mouth. The patient complains of an intense burning and gnawing pain in the affected parts, associated frequently with the feeling of maggots being present in them. Also of a severe frontal headache which may be referred to the sides of the head as far as the parietal eminences, or to the middle ear. Accompanying these symptoms there is generally a certain amount of reaction. The temperature rises with the onset of the disease and may reach a height of anything between 100° F and 103° F. It then follows a very variable course which may either be of the "Continued," or "Remittent" type, and usually drops to normal on about the 8th or 10th day of the disease, or in some cases perhaps a little earlier. With this there is slightly hurried breathing and accelerated pulse, furred tongue, constipation, anorexia, thirst, scanty high coloured urine and great restlessness.

An examination of the patients shows that the mucous membrane of the nose is extremely congested and so swollen as to almost occlude the nasal passage. The membrane is also deeply ulcerated, clinging to which and often half buried in the tissues could be seen the larvae more or less fully developed.

From the bases of these ulcers, sinuses could be detected leading in various directions into the underlying structures.

The soft palate is very frequently perforated and in extreme cases almost entirely destroyed. From the ulcers exudes a thin sanguous discharge which is intensely foul smelling, this dribbles away from the nose, or may flow into the mouth and is spat out by the patient.

Occasionally there is severe epistaxis.

The larvae may work up the nasal duct and emerge through the conjunctival of one or both eyes, or erode the cartilage and nasal bones and be found moving superficially under the skin over the bridge of the nose, or still further progressing upwards may attack the frontal bone and make their way into the frontal sinuses, or penetrate into the skull and ultimately cause death. The following will serve to illustrate some of the cases met with in the Agricultural Research Institute Dispensary at Pusa.

Case I—Kimari, Hindu female, aged 16 years, admitted to hospital complaining of swelling of the face with the presence of maggots in her nose, accompanied with severe pain and headache.

Condition of patient—The patient's face especially the upper portion was considerably swollen, and she appeared to be in great pain. An examination of her nose and throat revealed the mucous membrane very much inflamed and ulcerated in places, from which escaped a sanguous foul discharge while several half developed larvae were detected moving actively in the nasal fossa and feeding on the tissues, the septal cartilage of which, as well as the soft palate had been perforated. Temperature 102 4F, this was followed by a "Continued" type of fever for the first four days after admission which then came down to normal on the 10th day of the disease by lysis.

Treatment—Injections of oil of turpentine were used thrice daily, and inhalations consisting of—

Oil Eucalypti	5 ii
Creosote	3 i
Chloroform	3 iv

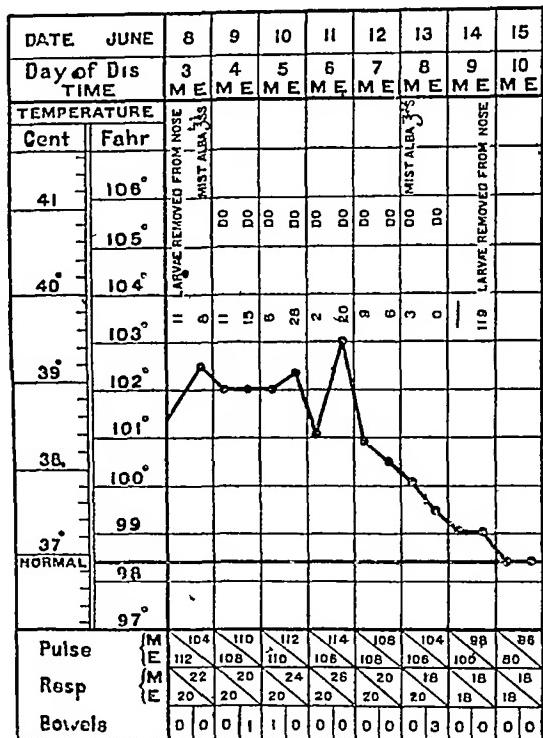
were used frequently during the day, with boric compresses to the effected parts. The use of bromides and morphia was frequently called for to counteract restlessness and pain, and constipation was met by laxatives.

Under treatment the larvae were readily extracted from the nose. The total number of which amounted to 119. The ulcers healed and the swelling of the face subsided with remarkable rapidity once all cause of irritation had been removed. The patient made an uninterrupted recovery and with the exception of the perforations in the soft palate and nasal septal cartilage which did not entirely close, went out of hospital apparently none the worse for her experience.

Case II—Sowdagar, Hindu male, aged 22 years, was admitted into hospital in a semi-

comatose condition, very restless, and with a history of maggots being present in his nose

Condition of patient—When seen the patient's condition was found to be extremely grave. His face and head were very much swollen and the skin oedematous. The septal cartilage of the nose with the alæ were completely eroded while practically the whole of the soft palate with a portion of the hard had been destroyed leaving foul ulcers with



irregular margins. Emerging from the ulcerated surfaces could be seen scores of larvae actively engaged in devouring the soft tissues some of which were found passing through the nasal ducts of both sides and emerging through the palpebral conjunctivæ, while others were seen moving under the skin of the forehead, in which burrows could be detected leading into the frontal sinuses into which they had entered and from thence had evidently attacked the brain.

The patient was very restless and at times delirious, with slight muscular twitchings, vomiting and symptoms of cerebral irritation. Temperature 102° F. Pulse feeble 112 per min. Respiration 24 per min. Bowels constipated. Urine passed in small quantities with traces of albumen. It was my intention to open up the sinuses and to remove as many larvae as possible thereby, but the patient's relatives on being informed that there was very little hope of his recovery carried him away to die in peace on the banks of the Ganges.

It thus appears that the disease runs a brief severe course being limited in duration and closely approximating with the length of time of the average larval period. The temperature dropping and all signs of irritation passing off about the 8th or 10th day of the disease. The maggots

are usually all removed from their shelter by about the 6th or 8th day. Once pupation begins the insect ceases to be an immediate cause of trouble. One cannot help thinking that these cases left to themselves are almost certain to terminate fatally, but when treated from the commencement, or even after the disease has advanced to a considerable degree there is no reason why the percentage of recoveries should not be very high. Of ten cases treated at the Agricultural Research Institute Dispensary, Pusa, all recovered with the exception of case II Sowdagai, who was taken away before anything could happen to him, thus shewing a percentage of 10 per cent of deaths. Manson states that in 13 cases collected by Laboulbene 9 proved fatal, i.e., a mortality of 69.3 per cent while in 31 cases seen by Maillaud, 21 died, or a mortality of 67.8 per cent.

These observers had however been dealing with the fly *Chrysomya Mocellaria*, it is therefore probable that either the larva of *Chrysomya* was more voracious and caused greater destruction of tissues than that of *Pycnosoma*, or that the cases were seen at a very advanced stage.

The Larva—The larval stage of the fly is the only important one from a medical point of view. The larvae are of a creamish white colour, about 14-17 mm in length. Cylindrical in shape and tapering towards the extremities, more so towards the anterior than the posterior. They consist of 13 segments which are divided from each other by circles of keratinous tissue on which are mounted 5 or 7 rows of minute spines which give the creature the screw-like appearance, and hence the common name "screw worm". The first or anterior segment holds the mouthparts which consists mainly of a pair of powerful mandibles, while the 13th or posterior segment carries the spiracles of breathing apparatus. The length of life of the larva is about 6 to 8 days.

When grown experimentally on decomposing meat placed over dry sand, the young larva were noticed to feed ravenously on the meat soon after birth and to grow with amazing rapidity until they were fully developed. Once fully grown they forsake their previous habitat and burrow into the sand where in 24 hours they begin pupating and there pass the whole of the pupal stage.

In those instances in which they were placed in dry crucibles with no sand the larvae were observed to be extremely active in their attempts to secure a suitable locality in which to pupate, but the absence of sand appeared to make very slight difference to their further stages, for pupa and imago developed in almost the same space of time as when the larva had imbedded itself. From this it seems evident that the creature when parasitic in man would during the first or 'feeding' portion of its larval life chiefly be

engaged in devouring and destroying tissues which, while being a source of considerable discomfort to the patient would not be the cause of as grave danger to the host as in the second or "burrowing" stage when the parasite would attack vital parts and thus threaten life. The burrowing is evidently prompted by two motives, (1) to secure a suitable nidus in which to pupate, (2) To get as far away as possible from the light.

The Pupa—The pupa enclosed in a reddish brown puparium is about 10 mm in length.

The pupal stage lasts about 6 days.

End of pupa

The Fly—The *Pycnosoma*, or blue bottle fly is about 10 mm in length with bright blue or green metallic appearance of thorax, and abdominal segments, and is the fly so frequently seen hovering over decomposing matter.

Note on the fly by Mr F M Howlett

The fly appears to be *Pycnosoma flaviceps*, though there is at present a slight doubt as to the correctness of the identification owing to the absence of a really good specimen for comparison. It is probably viviparous, as no traces of eggs or egg-shells have been discovered, and this condition is common among those flies whose larvae feed on decaying animal matter, for them it is important to take immediate advantage of the presence of a supply of food before it dries up, or becomes otherwise unavailable.

Immediately after deposition the young larvae begin burrowing away from the light into the food material, and remain thus more or less buried for the 6-8 days of larval life, feeding with great voracity. At the end of this period they cease to feed and become very restless, they lose to a certain extent their aversion to light, and travel rapidly in search of a dry place in which to pupate. If the food material has dried up in parts they may pupate there, but as this drying will not occur in cases of living flesh, they will usually emerge from the body of the victim, unless they have lost themselves in, e.g., the cranium, and fall to the ground, in which they will bury themselves, and turn to a reddish brown pupa, or "Puparium". While the normal course of the attack thus coincides in length with the feeding period of the larvae (*i.e.*, about a week), re-infection may very possibly occur in neglected cases owing to the attraction of the foul-smelling discharge for flies. Such as the common viviparous flesh-flies of the genus *Sarcophaga*. Since it is important to ascertain the identity of the larvae concerned (all flesh-fly larvae are very similar), we give a brief description of the salient features of the present species. It has been found that by preserving the larvae in hydrogen peroxide solution until they begin

to turn brown, the structural characters are generally well shown up.

The larva's general appearance is that of a typical "maggot" about 1½ cm long. The surface of the body has a series of ring-like patches of minute chitinous points. The head has two very minute antennæ and the usual hook-like jaws. The features of most importance are at the posterior extremity, where are seen two bean shape chitinous-plates marking the openings (spinaeular openings) of the breathing tubes (tracheæ). These plates are slightly approximated dorsally, and the three spinaeular clefts seen inside them have the inclination. Below the plates is a low horizontal ridge separated by a furrow from a more prominent ridge below it, this latter ridge bearing two large tubercles a little wider apart than the plates, is again separated from a lower ridge by a rather broad depressed space. This lowest ridge or projection likewise bears two large tubercles vertically under the pair already mentioned, at such a distance that the four tubercles form the four corners of a square, when the animal is fully expanded. Besides these there are four large tubercles on the edge of the upper flattened area bearing the plates, the upper pair of these being vertically over the outside edge of the plates. The position of the other smaller tubercles can be seen from the figures—unless a larva shows, when full-grown, characters which are unmistakably those just mentioned there is a probability that it belongs to some other species. It is desirable that larvae from cases similar to those described, and from wounds or sores, should in all cases be preserved for possible identification, and whenever possible should be allowed to pupate in sand, so that the species of the issuing fly may be determined.

In general appearance the fly is a shining metallic "blue bottle," about 10 mm long, with red eyes, a slight pattern of very faint stripes on the thorax, and on the hinder edge of the segments of the abdomen narrow blackish rings of darker colour. The common *Sarcophaga* to which reference has been made, has red eyes, a grey striped thorax and a curiously chequered greyish abdomen, and is about twice the size of a house-fly.

DOES BILHARZIA (SCHISTOSOMIASIS) EXIST IN INDIA?

BY FRANK MILTON,

The Wynad Medical Association

THE interesting case ("A Surgical Curiosity") described by Captain Bodley Scott in the October number of the *Indian Medical Gazette*, suggests the possibility of the urinary fistula and the

vesical calculus both owing their origin to infection by Bilharzia haematuria

On considering the probabilities of this case one cannot help being struck by the fact that allusions to this disease, Bilharzia, are almost entirely absent from Indian Medical literature

R E Montgomery (1) in 1906 stated that "Bilharziosis amongst animals is very common, at least in certain districts of India," and he was enabled to describe and name no less than three entirely new species of the parasite, *Schistosomum Indicum*, Sch Bomfordi, and Sch Spindale, found by him during the examination of a comparatively small number of horses and cattle, and he formulates the following conclusions:—

1 Bilharziosis is an established disease amongst the domestic animals of Northern India

2 Parasites have been obtained from the horse, donkey, cattle and sheep

3 The human parasite can live in India

4 India is suited for the propagation of the parasite, and

5 The genus *Schistosomum* contains six species (he omits *crassum* and *mansonii*), of which 5 have been discovered in the indigenous mammals of India

As far back as 1882 Cobbold (2) at a meeting of the Medical Chirurgical Society, in London, referred to the parasite as having been found in India among oxen and sheep, and in 1886 (3) and again in 1887 (4) Bomford described Bilharzia eggs which he had found in the intestine of transport cattle in Calcutta

These references are by no means numerous, but they point to bovine and equine Bilharziosis as being well known and probably widely spread throughout the country

Among men the disease has been but very seldom recorded, and of those cases which I have been able to trace probably the larger number were imported, infection having taken place elsewhere than in this country

The total number of references that I have been able to find are but six in all covering a period of twenty-one years from 1887 to 1907

These are as follows:—

1 In 1887 W R Hatch (5) referred to 12 cases seen by him in Bombay "where the disease appears to be more common than formerly, especially among Mussalmans who have made a pilgrimage to Mecca"

2 In 1903 Powell, (6) reported a case, also a native of Bombay who had painful haematuria and who was passing terminal spined on in his urine Referring to the same case later (7) he notes that this patient had never left the Bombay Presidency

3 In 1904 Major E P Sewell, (8) RVC refers to a case occurring in a British soldier at

Mian Mir, Punjab, who "had never been in Egypt or South Africa"

4 In 1905 Christophers and Stevens (9) noted "a peculiar *Schistosomum* egg found in the urine of a Madras native suffering from haematuria" The case was noted at Liverpool and no indication is given as to where the disease may have been contracted

5 In 1906 Lt-Colonel D Wardrop, (10) RAMC, described three cases in British soldiers who developed the disease in India after having served in South Africa None of these cases had had any symptoms of the disease whilst still in Africa

In the same article he describes two other cases, also British soldiers, who had developed the disease in this country, but who had never before been out of England Both these men developed the disease about six months after their arrival in India It may, however, be noted that cases have been described as occurring in persons in England who had never been out of that country (11) and 12

6 In 1907 Major W S Crosthwaite, (13) RAMC, reported a case occurring in Bangalore in a British soldier who, although he had served in South Africa, had had no symptoms of the disease whilst there

These are all the cases which, on a confessedly incomplete survey, I have been able to discover The case mentioned by Hatch of the native of Bombay who developed the disease a month after returning from Suez where he had stayed for 14 days, was so obviously a case of infection arising outside this country that it does not interest us Of those cases, apart from the earliest group mentioned by Hatch, only two refer to natives of India, and of these only one man had never been out of the country, and the other case was noted and recorded abroad

Of the British soldiers attacked, seven in all, four had recently served in a country where Bilharzia is rampant, and where many of the British troops are known to have acquired the disease, and may well have brought the parasite with them from thence

As Hatch's cases may be suspected to have occurred among "Mussalmans who had made a pilgrimage to Mecca," we have so far only one native who must have contracted the disease in this country, and three immigrants who may be presumed to have done so In the case of these three latter it would be interesting to know if there were men in their regiments who were suffering from the disease at the time they were, presumably, infected, for in the case described by Major Freeman (11) of Private Jeremiah, who developed the disease in England, it is noted that there were other men in camp at Borden, where Private Jeremiah reported sick, who had served in South Africa, and although it is not stated that any of

these were actually suffering from Bilharzia, it is still, I take it, intended to suggest the possibility of the infection being derived from the man's companions whilst in camp.

Granting that Bilharziosis in cattle is not necessarily accompanied by the disease in man in the same locality, as is shewn by the fact that whereas 75% of the cattle slaughtered at Catania, in Italy, and coming from Piana di Catania, are infected with Sch. crassa the disease is unknown among the human inhabitants, it would still seem very remarkable if this scanty record comprised the whole of the incidence of human Bilharzia in India.

It is impossible to believe that this is the case for the disease is known to be almost everywhere prevalent over the whole world between say the parallels of 35 degrees N and 35 deg S of the equator. Throughout this belt it would be difficult to name any country, other than India, in which medical conditions are observed and reported in which cases have not been recorded, and over very large tracts of this belt it is estimated to attack from one-third to the whole of the native population. In Egypt it is probably true that every individual (native) born and surviving for say 10 years, suffers at some time or another from Bilharzia. In parts of Natal and Cape Colony it is probable that the incidence is almost as high. In Zanzibar (14) one-third of all male natives are said to be victims to the disease. In Mauritius (15) "in certain districts endemic haematuria (bilharzia disease) is very common" "The disease is widely spread throughout Mesopotamia (16) occurring in those living in towns and villages situated on the banks of the rivers Tigris and Euphrates". It has been described by J. Scott (17) as occurring in Persia. In Japan (18) it is very common "in a certain village of 117 persons working in one particular piece of land almost all were suffering from Schistosomum infection". In China (19) where it is widely spread, there are said to be foci where one-third of all boatmen and farmers are infected.

When, in face of this Montgomery says "the human parasite can live in India" and "India is suited for the propagation of the parasite," can it be doubted that even if not originally infected, India, after harbouring, as she must have done many infected cases having so many routes open through which infected persons must be continually passing as is indicated even in our scanty records pilgrims from Mecca, troops from South Africa, travellers from all parts must be by now infected and widely infected?

I may not now beg the space in which to show how easy the infection of a locality is, nor how one single person, harbouring the parasite, may infect an indefinite extent of country but I do make the statement that it is so.

That India is infected most, I think take for granted, and it only remains to determine which is the infecting species, and why the disease is not more frequently diagnosed and described.

Apart from the disputed Sch. mansoni, the two main species pathogenic to man are Sch. haematobium and Sch. japonicum. These though differing so little in their own anatomy and the form of their eggs, give rise to diseases which, whilst constantly overlapping, as it were in their symptoms and in the lesions they cause are yet constantly uniform for each species and are widely differentiated in their leading characteristics.

Sch. haematobium, the true "Bilharzia" causes typically, lesions of the urinary apparatus especially, and its leading and most striking manifestation is in a peculiar persistent and painful form of haematuria.

In many parts of the tropics "Endemic Haematuria" has been noticed and diagnosed from the times of their earliest medical history. In practically all those districts the disease so named is now known to be due to Schistosomum and to be "Bilharzia".

The parasite also gives rise to a pseudo dysentery in those cases in which the large intestine is primarily attacked, and this symptom might possibly escape notice in a country where the various forms of dysentery are so common, and which in many cases possibly escape sufficient study, but I doubt if the peculiar chronicity and the frequent association of this form of "dysentery" with haematuria and other manifestations of Bilharzia would allow it to pass for long unchallenged.

These two symptoms haematuria and mucosanguinous diarrhoea and the occurrence of urinary fistulae are the main characteristics of Bilharzia as seen in Egypt.

In South Africa where Bilharzia, also due to sch. haematobium, is very prevalent, the main, and in many cases only sign is haematuria. The disease as seen in this part of the continent is of much less severity than the Egyptian form, and appears to be more transitory and to tend more speedily towards spontaneous cure.

Infection taking place in early life and the disease not being of long duration as a rule, cases are found almost exclusively but by no means entirely so, among children and young adults, and causes so little pain or distress that the power of passing bloody urine is looked upon as an interesting accomplishment by many of its youthful possessors and an extra access of hemorrhage confers a certain distinction upon its fortunate possessor among his envious comrades.

In Schistosomiasis due to Sch. japonicum the disease runs an entirely different course so much so that a differentiation should, I think, be made in the nomenclature. It might be possible to

retain the name "Bilharzia" for the type of disease due to Sch. haematobium and having the characteristic symptoms originally described by Bilharz in 1852, (20) and Schistosomiasis, or perhaps better still the original Japanese name of "Katayama disease" confined to the form seen in China and Japan and due to Sch. japonicum.

The picture exhibited by a typical case of "Katayama disease" is as follows.—The patient, usually an adult, and belonging either to the wet cultivator, fisherman, or boatman class, is first attacked by an indefinite and irregular form of fever. The fever might be taken for Malaria, but in these countries where Malaria is familiar to the people the patients are constantly noted as saying that they know they are not suffering from this disease, there being, to them an appreciable difference between the Schistosomiasis fever and that due to malaria. The fever is very irregular, sometimes lasting only a day or two at a time with recurring attacks and sometimes persisting for several weeks without a break. This fever is generally followed by, or alternates with, attacks of so-called "dysentery". During these attacks the patient suffers a great deal of abdominal pain, often localised over the liver, and passes frequent motions of an offensive, pasty, character and containing blood, mucus, and, notably, undigested food. This primary stage of recurring attacks of fever and dysentery may last for an indefinite period, the patient being able to continue his occupation but constantly ailing and suffering from gastric pain and discomfort.

After a time the liver and spleen enlarge and ascites develops. The accumulation of fluid in the abdomen often takes place very rapidly and to a very large amount, and begins, as a rule, during an attack of fever or dysentery. During this time the patient suffers from a progressive loss of flesh, with increasing weakness. A large number of the patients suffer acutely from sleeplessness a peculiarity about which is that the time of night at which this occurs is peculiar to the particular patient and is more or less the same for that patient throughout.

In the later stages of the disease the liver after being enlarged shrinks and becomes small and cirrhotic.

Death, as a rule takes place from exhaustion or from some intercurrent disease such as pneumonia.

This represents the more usual and chronic form of the disease and in this form it has been confused with both Malaria and Kala-Azar.

In some cases the disease, after it has become established takes on an acute cerebral form, the patient developing Jacksonian epilepsy, hemiplegia or other sign of lesion of brain tissue. Or it may be of an acute abdominal type where in

the ordinary course of the disease the patient is suddenly seized with acute "choleraic" symptoms with continuous diarrhoea and cramp and death in a few hours. Catto's classical case (21) from which he originated the name Sch. cattoi (since upset by Looss) (22) died in quarantine at Singapore "of cholera after three days' illness," though a most minute and detailed account of the post-mortem examination made by Catto shows no evidence of the disease having been cholera but does show an intensely acute enteritis due to Sch. japonicum.

I have endeavoured to indicate in the fewest possible words the distinction between the two main types of disease due to Schistosomum infection as illustrated in the two countries where they show their greatest differentiation. The disease wherever found is always akin to one or other of these type forms, and it is under the guise of one of them that the malady should be looked for in India.

As far as our scanty records go all the cases described as having been introduced into, or found in this country have been due to Sch. haematobium and have had haematuria as their leading symptom, and one would possibly be induced thereby to expect that Indian schistosomiasis would be "Bilharzia," but it seems to me impossible that this should be the case. The leading symptom of Bilharzia is so gross and so immediately striking that it could never have remained undetected for long and there must have been recognised centres if only of "Endemic Haematuria" but such as far as I am aware, is not the case.

We have no record if its introduction gives rise to symptoms which, though striking enough when once recognised do whilst still unfamiliar and unexpected, lend themselves to confusion with other diseases and as it happens, with diseases with which we are all so familiar that we are perhaps inclined to accept them as diagnosed, as it were on sight, when further thought and consideration might lead us to detect something unfamiliar about the cases, and we may thus up till now have failed to detect an important disease which may be, even widely, disseminated throughout the country.

Whether the different species of Schistosomum are mutually exclusive as far as man is concerned, I do not know. Among animals, as Montgomery has shown different species may exist not only in the same country or district, but in the same animal (22). As far as I know, with the exception again of the disputed Sch. mansoni in no country has more than one species been described with the exception of course, of evidently immigrant cases. If this is so, and the speculation is an interesting one it might account for the curious fact of so many known, and in full certainty as many unrecorded in

stances of the introduction of the Egyptian or haematuric form of the disease failing to propagate the infection, it being presumed that the Sch japonicum already holds the field

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A Mirror of Hospital Practice.**THE TREATMENT OF SIMPLE FRACTURES,
DISLOCATIONS AND SPRAINS BY MAS-
SAGE AND EARLY MOVEMENT ***

BY A HOOTON

MAJOR, I M S

In a standard work on surgery published in 1895 the following passage occurs—"In the treatment of an uncomplicated simple fracture all that the surgeon has to do is to place the fragments in proper position and retain them there, and to attend to the general health of the patient on ordinary principles. Nature unites the bone. In no way can the surgeon accelerate the process or improve upon it, but by meddlesome treatment he may retard and disturb it." During the 18 years since this was written, by one of the most distinguished English surgeons surgical opinion has been slowly changing. It has taken a great deal of writing and demonstration to convert the profession to a different

view, but there can be no doubt that the consensus of opinion is now in favour of a different line of treatment, and that the advisability of early movement combined with massage is generally admitted, though, in working class practice especially, it may not always be practicable to spare the time necessary to carry it out effectively. The two chief advocates of early movement and massage in fractures, dislocations and sprains were a French surgeon, Lucas Charnonnier, and Wharton Hood, a London surgeon who had studied the practice of Hutton, a famous English bone-setter. The bone setters are unqualified practitioners, frequently of a very ignorant type who are looked on with suspicion by the regular medical profession in England, and it was perhaps for that reason that little notice was taken of Wharton Hood's earlier writings in connection with the treatment of injuries in general. It was known that he had worked with Hutton, and no doubt he would suffer in professional credit for having done so. Hutton, however, was a very well informed and clever man, far above the ordinary bone setters in ability, and had the opportunity of observing large numbers of old injuries, brought to him in many cases after distinguished surgeons had failed to cure them. His observations had led him to the belief that ordinary surgical practice in such injuries as old sprains and fractures in the vicinity of joints, followed by stiffness often associated with much pain, was all wrong. Following up this idea, and developing the methods handed down to him by his family, who had also practiced the profession of bone setting for generations before, he adopted forcible movements in these old injuries, often with great success, succeeding repeatedly in cases where the regular surgeons had failed. No doubt he had his failures, also, but there his position was unusually fortunate. Nothing was heard of the failures, because people who suffered under his treatment were ashamed to confess that they had consulted an irregular practitioner. Thus Hutton acquired a great reputation, and when circumstances placed Wharton Hood in a position to study his methods he seized the opportunity, and for two years regularly attended the bone setter's consultation room. In this way Wharton Hood became aware of the great service of massage and early movement in old injuries and it was not long before he carried the system further, to the treatment of recent injuries. At the same time Lucas Charnonnier, was working on the same lines in his hospital in Paris and the two observers arrived independently at very similar results. The orthodox surgical practice as regards fractures, up to quite recently, has been that the fragments should first be placed as nearly as possible in their normal position, and that then every thing should be sacrificed to keeping them at rest. With this end in view it has been customary to put the limb in splint, so arranged, in the case of most of the fractures of the extremities as to secure immobility of the joints above and below the seat of injury, and to postpone the treatment of any stiffness that might arise until after firm union had taken place. The occurrence of stiffness, often due to organic adhesions in the joint, was in fact looked upon as a necessary consequence of a fracture, and it was quite usual, in fractures in the neighbourhood of joints, to find the limb useless and painful when the splints were removed after 6 to 8 weeks, and to reckon a further period of two or three months, occupied in passive and active movements and massage as a part of the regular treatment. It was supposed that any movement before firm union had taken place would result in failure of union. But the advocates of the new system of treatment contended that so far from union being delayed the formation of callus was actually stimulated by movements carefully carried out, and they instanced the ready healing of fractures in animals, such as the dog in which it is impossible to keep the part entirely at rest, in proof of this statement. It is now generally admitted that this argument is sound, and that, granted that the part is brought into good position and kept

* From Transactions of the Kathiawar Medical Society.

there, nothing but good can result from massage and movement carefully and properly carried out. Opinion still differs as to the extent to which splints and various other retentive apparatus should be employed in various fractures, as to when massage and movements should be begun, and various other details, but the general principle may be said to have been accepted by all but the most conservative practitioners.

The arguments in favour of this treatment in fractures are as follows—

(a) Bony union is not only not retarded, but is actually favoured by massage and early movement.

(b) Pain is relieved and inflammation with its attendant swelling reduced by the improved nutrition which accompanies the accelerated circulation. The inflammatory effusions are absorbed and swept away into the blood stream instead of remaining to become organized into fibrous tissue and form adhesions.

(c) The nutrition of the muscles is kept up, and atrophy and contractures, which are so common after the ordinary treatment, prevented.

(d) As a result of all this the part is fit for use almost as soon as union is firm, instead of having to be submitted to a long course of treatment to break down adhesions and remove stiffness afterwards. It will be seen that many of these arguments may be applied in the case of dislocation and sprains also.

Method of employment—There appears to be an impression in many quarters that this treatment can only be carried out with the aid of a skilled masseur. This is not so. Any medical practitioner can easily become familiar with it, and it is even possible to teach an intelligent relation or servant to do what is necessary, under supervision.

Massage—When the injury is first seen if there is much pain a small hypodermic injection of morphine may be given, but as a rule this is not necessary. Any fracture or dislocation is then reduced and the limb placed in a comfortable position on a pillow, or on the splint which is to be employed. The part should then be washed, dried with a towel, and dusted with boracic acid, starch or flour, to facilitate the rubbing. Gentle stroking movements are then made with the flat of the hand, towards the heart (in the direction of the circulation) avoiding the actual site of the injury but approaching close to it on both sides. This is all that is necessary at the first sitting, but as time goes on the massage is carried out more vigorously, and the deeper tissues are included, the muscles concerned, especially at some little distance from the injury, being subjected to deeper pressure and the whole process being prolonged so that, while at first it occupied, together with the movements perhaps ten minutes, eventually it may take as much as twenty. When it is completed the part is put at rest with or without splints as may be desirable in the particular case, and the process is repeated at intervals usually of one day but in some cases of several days, splints, when in use, being partly or completely removed, and the part properly supported. In certain fractures, when there is difficulty in reduction owing to muscular spasm, massage may even be employed before reduction, with the view of relieving the spasm and facilitating the bringing together of the parts.

Movement—In massage, carefully employed, there is no danger at all, but the employment of movements, more particularly in fractures, requires much care. Movements, either passive or active, if impudently carried out, may easily produce displacement of the fragments and do more harm than good. But with due caution they have no risks, and are very useful, and they should nearly always be combined with massage. Active movements, i.e., movements produced by the patient's own muscles, are more likely to give rise to displacement than passive, and should not therefore be employed as a rule, in the earlier stages of treatment, though in some cases, for instance Colles' fracture, the patient may be encouraged to exercise his muscles to a limited extent from the first. The chief points to bear

in mind are that when employing movements in fractures the ends of the fragments must be supported so as to prevent as far as possible any motion at the point of fracture, and at first only to carry out gentle and limited passive movements, reserving the wider range of passive and usually all active movements until at least a week or two after the injury, while in dislocations also only a very restricted range of movements should at first be employed, and those which would tend to lead to a recurrence of the dislocation should be particularly avoided. That in the case of both shoulder and hip, the patient would be specially cautioned against any but very slight abduction until the joint was quite strong again. In sprains the movements should be regulated generally by the amount of pain experienced, but in severe cases a certain amount of pain may be disregarded in view of the danger of adhesions, and combined with massage carefully graduated movement can usually be tolerated.

SOME SPECIAL FRACTURES

Summary—The original advocates of this system of treatment advise that splints and other fixation apparatus should in most cases of fracture be given up entirely, but my own view is that as a rule it is safer to employ massage and early movement in conjunction with this though they may often be given up earlier than has been hitherto the custom, if union is progressing satisfactorily, the limb being supported with a sling, in the upper extremity, or with bandages or pillows in the lower, and massaged and moved more and more frequently as time goes on. Still there are certain fractures which are best treated without any fixation apparatus at all. It is impossible to go much in detail here, but the following may be mentioned as instances on the recent modification of treatment on these lines—

Clavicle—If prevention of all deformity is very important, as in some women, keep in bed 3 weeks, lying on the back with a small pillow between the shoulders, and massaging the injured shoulder daily. In ordinary cases, keep the arm in a sling without any other fixation, for about the same period, with progressive massage only for the first week, and later passive movement.

Olecranon—No fixation apparatus is required, but only a sling. Massage and passive movements are carried out gently from the first, and gradually increased, and after a week gentle active movements may be allowed. The sling can usually be removed in about 3 weeks, but for 2 months no hard work must be done. Union is by fibrous tissue, as is usually the case here with other forms of treatment also.

Colles' fracture—In this the advantages of massage and early movement are very marked, and they should be carried out from the first daily. But in the intervals the part should be supported with anterior and posterior splints, so arranged as to allow free movements of the fingers. The splints can usually be given up in about 2 weeks, and the forearm supported in a sling.

Intracapsular fracture of the upper extremity of the femur—This is the fracture caused usually by slight violence in old people, and it must be distinctly understood that the following remarks do not apply to other fractures of the femur, which require some form of splint. The limb should be kept between sand-bags for a week, and massaged daily. Afterwards, if the patient is strong enough to get up, he should be allowed to walk on crutches, with a boot with a raised sole on the sound foot, and the injured limb supported by a sling passing round his neck above and under the foot below. At first the thigh is only swung gently backwards and forwards at the hip, but gradually more extensive movements are made, and soon a little weight can be placed on the injured limb. It is admitted, of course, that bony union does not occur under this treatment, but neither does it, as a rule, under any other treatment short of operation, in this fracture.

Patella—Keep the patient at rest in bed for a few days, with the limb between sand-bags, or supported

with a McIntyre or other back splint. Massage and perform gentle passive movements from the first. After about a week encourage the patient to walk a little, with a stick, the knee joint being supported for another week with a small back splint. Progress is slow, and full use cannot be made of the limb for several months. Bony union is not expected and there will always be a certain amount of separation between the fragments, but this does not apparently give rise to any serious incapacity.

Dislocations—The general principle may be laid down that after reduction of a dislocation the injured joint should be restrained for some time, so as to prevent or restrict particularly those movements which would be likely to cause a recurrence of the displacements, but that, as a rule, daily massage should be begun at once, and after a few days careful passive movements also carried out. Thus, a dislocated shoulder should be treated with a sling, an elbow with a right angle splint, and a hip by rest in bed and tying the knees together, but in all uncomplicated cases massage should be begun at once, and movements as soon as possible (usually after a few days), the splint or other apparatus being removed for the purpose and reapplied afterwards. The results of prolonged rest, without massage or movements, are atrophy of muscles and stiffness, as in fractures.

Sprains—Neither cold nor heat, as usually recommended, need be applied, but when it has been ascertained that there is no fracture, the part should be carefully bandaged with a woollen bandage or strapped with some form of plaster, cut in strips, and put at rest, the patient going to bed, in the case of the lower, or using a sling in the case of the upper extremity, for a few days, or as long as may be necessary. The joint is massaged, over the bandage or strapping, and moved gently every day, and as soon as possible the patient should exercise it himself, by walking a little with crutches, or otherwise. When the strapping or bandage gets loose it is re-applied, and after a time, which varies according to the injury, it can be dispensed with. The main point is to get the part into use as soon as possible, and by this method many cases which would otherwise have gone on for prolonged periods, with pain and stiffness, make a rapid recovery.

References—Information on this subject may be found in the article on fractures in Hutchison and Collier's "Index of Treatment," in "The Treatment of Injuries," by Whitton Hood, and "Massage in recent Fractures" by Sir W. Bennett, to the authors of which acknowledgments are due for some of the above details.

A CLINICAL LECTURE ON PHYLACOGEN DELIVERED TO THE POST-GRADUATES OF THE CAMPBELL HOSPITAL

By K. K. CHATTERJI, F.R.C.S.I.,

Teacher of Surgery and in charge of Surgical Ward, Campbell Medical School and Hospital, Calcutta

GENTLEMEN—I have before you this morning some cases treated by phylacogen for various conditions. I shall also show you reports of some cases which are not now in the wards but were treated with phylacogen. I have often talked to you about vaccine therapy and sero-therapy. Phylacogen therapy, if it may be called so, is very much allied to it. They act on similar principles but there are certain points of advantage.

Phylacogens are modified bacterial vaccines consisting of sterile aqueous solutions of metabolic substances or derivatives generated by bacteria grown in artificial media. The idea was originat-

ed by Dr A. F. Schaefer of Bakersfield who presented his views for the first time before a Medical Society in Fresno, California, late in the year 1910. His idea is primarily based on the fact that a vast majority of infections either pyogenic or specific are of a mixed nature. For instance you take the case of this patient (Bed No 20, Frasei, B ward) who has an appendicular abscess. He was admitted with an abscess discharging foul pus. The pus on examination showed coli bacilli and with these a large number of staphylococci and streptococci. This is a case of mixed pyogenic infection. Again you see this case (Bed No 3, Frasei, A Ward). This is a case of tuberculous hip joint with secondary pyogenic infection. He was admitted with numerous fistulae leading to the hip joint and the discharge on examination has shown numerous cocci though the disease originally started with a tuberculous infection. This is a case of specific infection with superadded mixed infection. This is true for other specific infections as I have shown you a number of cases of gonorrhœa in which the discharge on examination showed gonococci and with these other cocci. Instances like these can be multiplied but we can draw this conclusion that in most cases of infection though there may be a preponderance of a single species of organisms those of other species are almost invariably present. In treating these cases therefore our attention should be directed towards combating the secondary organisms either previous to attacking the preponderating or specific organisms or concurrently with it. It has been suggested that the presence of secondary infecting organisms in the system along with the primarily infecting specific organisms so modify the character of the latter that treatment by specific vaccines alone is not attended with the anticipated success.

You know what polyvalent streptococci serum is. I have told you how it is prepared and what its actions are when introduced into a patient. All phylacogens consist primarily of a preparation obtained from cultures of a large variety of pathogenic bacteria. This is the basic phylacogen and is a polyvalent preparation (and has been called polyphylacogen) because the cultures are made at frequent intervals and from a variety of sources. This basic phylacogen is put out in the market as mixed infection phylacogen. In the preparation of specific phylacogens to this base is added substances obtained by a similar process from cultures of particular organisms, the specific action of which causes special pathological conditions in the patient. The specific phylacogens include those for gonorrhœa, rheumatism, erysipelas etc.

It was not without a certain amount of hesitation that I took to phylacogen treatment for a certain class of patients. The first patient for

whom I tried it was a case of severe facial erysipelas. The striking effect of treatment will be seen in the record of cases which you can see for yourself.

You will gather from the record of cases that I have used phylacogen for several conditions:

1 For erysipelas Cases Nos 1 and 2
 2 Mixed infection phylacogen (*a*) for septic conditions Case Nos 3 to 6 (*b*) as a prophylactic measure in post-operative conditions where sepsis was apprehended Case Nos 7 and 8 (*c*) as a preliminary measure before using tuberculin in pulmonary tuberculosis.

3 Rheumatism phylacogen for chronic rheumatism Case Nos 9 to 11

4 Gonorrhœa phylacogen for gonorrhœa and gonorrhœal arthritis Case Nos 12 to 20

Lastly, one word about the posology of phylacogens. I have generally small doses to begin with and then I increased the dose gradually. If large doses are given at the first injection the reaction may be severe. It has been so in one of my cases. Where subcutaneous injections fail to respond intravenous administrations will prove effective as you will see in one of my cases. The doses were given in four to six ounces of normal saline solution.

Case No 1—R J T, aged 35, male, occupation Jetty Sealer, admitted 1st April 1913, suffering from facial erysipelas. Five days before admission got swelling of the face and skin oedema without any previous injury. A rash then appeared on the face, chest, arms and trunk within 24 hrs. On 2nd, 5 c.c. erysipelas phylacogen injected subcutaneously, slight rise of temperature. On 3rd, flushing, pain swelling less. Another 5 c.c. erysipelas phylacogen injected temperature rose slightly and returned to normal following day when there was no pain, and swelling had completely subsided. The skin had assumed a healthy condition on the 5th and patient was discharged cured on that day.

Case No 2—M B, aged 30, female admitted 12th June 1913, suffering from erysipelas. Four days before entering hospital she got a vesicle on dorsal aspect of right hand. The hand and forearm gradually inflamed and increased in size also glands of neck and groin. 2 c.c. erysipelas phylacogen was injected on morning of 13th. Temperature rose to 100 and maintained for 12 hours. On 14th, temperature normal, inflammation subsided. Temperature remained normal and on 17th another 2 c.c. was given. The patient was discharged cured on 22nd June 1913.

Case No 3—Bed 45, Fraser B Ward M N C, male, aged 35, railway signaller, admitted 7th August 1913 with large boil on right side of back of 15 days' duration. History of gonorrhœa about 8 years ago. The boil was incised and drained, no discharge of pus but a little thin watery matter on pressure on 11th following which 5 c.c. mixed infection phylacogen was injected the temperature at the time being normal. Temperature rose, to 99.7 on morning of 12th and fell to normal that evening. His health was improving and 5 c.c. mixed infection phylacogen was given again on 13th. Patient was discharged cured on the 16th.

Case No 4—Bed 45, Fraser A Ward, J A male, aged 40, cultivator, admitted 16th August 1913 suffering from a large carbuncle on back, size $\frac{1}{2} \times 12 \times 8$. History—18 days previously he had a nodular hard eczematous patch on the back. It gradually increased in size. Numerous openings formed in the nodular lump which discharged. Very painful. Temperature

103.5 1 c.c. mixed infection phylacogen was injected and temperature rose to 104 dropping during the next day to (17th) to 99.3. On the 18th 1.5 c.c. mixed infection phylacogen was given and temperature rose during the day to 105.7 falling the same evening to 100.2. Temperature continued high and on the 21st an auto vaccine was given and repeated on the 23rd without showing improvement in patient. Temperature dropped to 99.8 on the morning of the 24th but rose to 105 that evening. Temperature has fallen to 99 at 8 A.M. on the 25th. An injection of Sp. Aether sulph. M x and liquor strychnine M v was given followed by 2 c.c. Mixed infection phylacogen at 8 A.M., patient succumbed on 26th at 7 A.M. death being due to exhaustion from carbuncle. This patient did not respond either to phylacogen or auto vaccine.

Case No 5—Beharry, H M, 27, Fraser B Ward, No 33. Admission 25th June 1913, for synovitis right knee joint. Right knee joint swelled up after a slight injury 3 weeks ago. The swelling increased and the joint became very tender. He could not move the joint. Temperature chart shows regular rise and fall. He was treated with salicylates and limb was immobilised with splints. Pain was only slightly less but returned on removing splints. Rheumatism phylacogen 2 c.c. was injected on 10th July, temperature came down and pain was less. Another 2 c.c. was injected on 14th July pain in the knee disappeared. Phylacogen treatment could not be continued. A slight swelling appeared with fluctuation. On 24th July knee was aspirated as the fluctuation persisted and an irregular type of temperature was seen. The aspirated fluid was chiefly synovial with flaky lymph. On examination by culture this was found sterile. Subsequent to this he developed an abscess in middle third of thigh. He was treated for this. This case shows in remarkable effect of rheumatism phylacogen in bringing down temperature and reducing pain and swelling.

Case No 6—A C B, aged 30, male, occupation, shop keeper, admitted Aug 5th, 1913. Suffering from hydrocele with gonorrhœal discharge from the urethra. History shows that patient contracted gonorrhœa 7 years previously. August 5th, 1.5 c.c. gonorrhœa phylacogen given, practically no reaction. Hydrocele tapped on 6th. Gonococci both intra and extra cellular, August 7th gon phylacogen 3 c.c. injected, slight rise of temperature, discharge and pain less. Aug 9th, discharge considerably reduced 5 c.c. gon phylacogen injected—temperature rose to 105° on 10th and dropped to normal on 11th, at 8 A.M. On 12th gonococci found a noticeable fact being that there were many intra cellular and a few extra cellular. Discharge continued to decrease, and on 17th there was no discharge, all this while temperature remained normal. On 19th August gradual dilation of urethra, temperature rose to 101°, temperature touched normal next day and patient was discharged on Aug. 23rd cured.

Case No 7—K K M, male, aged 30, shopkeeper by occupation. Suffered for about 2 years with rheumatic conditions and gonorrhœal discharge from the urethra. Admitted to hospital on Aug 15th—was given subcutaneously 2 c.c. gonorrhœa phylacogen on the 19th with no marked reaction or improvement, on the 23rd 5 c.c. gon phylacogen injected subcutaneously. This was followed by disappearance of discharge on the 25th. Note constant rise of temperature between this date and the 30th when a further 3 c.c. gon phylacogen was injected and none till the 6th of Sept on which date 5 c.c. was injected. On the 7th a further 5 c.c. was injected followed by marked rise in temperature. On the 8th a further 5 c.c. was injected subcutaneously followed by decrease in pain. The injections were now changed to intravenous, on the 9th, $\frac{1}{2}$ c.c. being given, marked decrease in pain in joints. On the 12th 1.2 c.c. was given, after which patient steadily improved. On the 19th patient was given an intravenous injection of 2.5 c.c. with a big jump in temperature accompanied with rigor.

Patient made rapid improvement receiving one more intravenous injection On Oct 1st, 2 c.c gon phylacogen Patient was discharged cured on the 4th Oct

Case No 8—I C M, H. M 50 Chronic gonorrhœa, posterior urethritis and prostatitis, neglected Seen on 28th June, 1913 induration along urethra, stricture, sound could not be passed, very tender, gonorrhœa phylacogen injected 2 c.c on 28th June 1913 and repeated on 1st July 1913, 3 c.c, induration and pain less Third injection 3rd July 1913, 5 c.c, pain still less, some induration persisted On 5th July 1913 catheter could be fairly easily passed, the pain and spasm having disappeared In this case phylacogen injection relieved pain and spasm and facilitated passage of sounds which was not possible before

Case No 9—G. C. B. H. M., 28, had gonorrhœa 2 years ago, treated by internal medication Pain and swelling of the left knee joint 18 months ago He put himself under a Kabiraj during which time his knee got ankylosed at 120 degrees, articular and peri articular tissues are involved Came under my treatment on 19th June 1913 Passive movement impossible, very tender Hot air baths everyday with massage, gon phylacogen 2 c.c injected on 22nd and 3 c.c on 25th, passive movement was possible on 29th June Gon. phylacogen 4 c.c on 4th July 1913 There was severe local and general reaction after each injection Passive movement made on 6th July 1913 and limb brought straight with elastic pressure Fair amount of movement Patient can walk about and went home

Case No 10.—Bed 44 Fraser, B. Ward R. N. S., male, aged 25, admitted on 18th August 1913, suffering from ankylosis (multiple) History of rheumatism in father also in patient No history of syphilis or gonorrhœa No history of tuberculosis in family Usual treatment followed without improvement until 2nd September when 2 c.c rheumatism phylacogen was injected Temperature remained normal On 5th, 3 c.c rheumatism phylacogen was injected and temperature rose to 102 falling next day to 98 On 8th 5 c.c rheumatism phylacogen was injected and temperature rose to 100·4 falling next day to normal Pain in joints only slight On 10th, further improvement was shown Temperature kept about normal and on 14th pain was almost nil

Case No 11.—J. M. R. History of "rheumatism" of both knees about 6 months He has always suffered from a "chronic throat" Fluid had been aspirated several times and treated by immobilisation No effect, joint filled up again and pain persisted and movement still impaired Hot air baths improved temporarily but it returned to former state soon The fluid was aspirated and examined by culture methods twice with negative results Rheumatism phylacogen was injected with increasing doses at 48 hours' interval Patient can walk about now After last aspiration tincture iodine was injected There is practically no swelling now, the joints having assumed normal contour Hot air baths were continued throughout Each injection was followed by high rise of temperature and increase of pain and swelling in the knees

NOTES ON SOME CASES

BY E. H. V. HODGE, M.B., B.C. (Cantab.),

CAPT., I.M.S.

TYPHOID PARALYSIS

LESSONS of the Spinal Cord, though rare in Enteric Fever, have been described in all variety It is, perhaps, hardly to be expected, in a disease of which the toxic effects on the central nervous

system are so marked, that lesions of the cord should be of such comparative rarity The following case presented a series of phenomena pointing to an interruption, haemorrhagic or thrombotic, of the lower motor aie —

The patient, a Sikh Duzee, stated on admission, that he had suffered irregularly from fever for the last three weeks, but that it was not until three days ago that the fever had become constant During that time, apart from progressive debility and some headache, he had not suffered much inconvenience On admission, the condition of the patient was fairly good, though he appeared apathetic and there was some delay in answering questions The temperature was 100, pulse 90, poor in impulse and volume The tongue moderately furred, the teeth moist, no tympanites, diarrhoea or other abdominal symptoms On the third morning after admission, the patient complained that he could not use the right arm and leg The leg was completely paralysed, with loss of knee-jerk and flaccid muscles The arm was partially affected Wrist-drop was complete, there was paresis of the forearm with very weak grip, and paresis of the muscles of the upper arm The abdominal reflex on the affected side was absent

No alteration of sensation could be elicited, though the condition of the patient hardly warranted a very searching examination The onset of the paralysis was curiously free from incident, there was no rise of temperature, or of pulse rate, there was no pain and the patient only woke in the morning to find himself in this condition

Till the day of death, twenty days later, there was no change progressive or retrogressive, in the paralysis The toxic state of the patient increased in intensity daily, culminating in a low delirium on the twelfth night after admission, and a semi-conscious state during the day.

There were, however, subsequent to this, intervals during which the patient was quite rational, took nourishment readily, and conversed with his friends With a weakening circulation, the mental depression became accentuated, until death on what was estimated to be the fortieth day of the disease

On the fortieth day the temperature rose abruptly to 104·5 and the patient died of heart failure Throughout the disease, apart from the terminal rise, the temperature never rose above 101 A low Widal reaction 1-50 in half an hour, suggests a poor resistance to the infection

The exact nature of the lesion must remain a subject for speculation, as no autopsy was obtainable The sudden onset and lack of progression point to a haemorrhage or thrombosis

rather than a Myelitis At the period of the disease at which it occurred a haemorrhage is perhaps more likely

II.—NODULAR SUBACUTE RHEUMATISM IN AN ADULT

The following case is one of subacute rheumatism in which the nodules and the symptoms arising therefrom were so pronounced as to overshadow the more usual symptoms

The case was characterised by irregular fever, usually below 100, pain in the joints, painful fascial deposits, appearing at intervals and persisting for some time in spite of full doses of Salicylates

The patient, a Punjabi Mussalman, at 23, was admitted to Hospital on 15th November 1912 for fever He did not complain of any pain till the third day, when the right shoulder, and, a little later, both knees became painful and tender, but not swollen Shortly after, diffuse swellings appeared under the skin of the right forearm, and on the inner side of the right thigh These swellings were visibly raised, acutely painful and tender, but not red or discoloured The second finger of the right hand could not be extended owing to involvement of the tendon sheath

10th Day—There has been no diminution of the pain under full doses of Salicylates A new deposit has arisen on the axillary border of the pectoralis major, and the swelling on the forearm has increased so that three fingers cannot be extended

24th Day—The pain is less, some movements of the fingers are possible and the swelling of the leg has subsided.

31st Day—The swellings, from being diffuse with indefinite edges have developed into hard well-defined nodes, intimately connected with the fascia

38th Day—The deposit on the Pectoralis Major has now practically disappeared A new deposit has arisen on the supra-scapular

48th Day—The position of the swelling occupying the back of the scapula has now altered, so that it now occupies the posterior axillary fold and involves the insertion of the Latissimus dorsi No further swellings appeared, and, within a fortnight all nodules had resolved For about a month after this, the patient complained of pain in the knees and ankles rather severe at night but passing off as the day grew warm This ultimately ceased and the patient recovered completely, and, after a lapse of eight months, there has been no recurrence of symptoms

A careful watch was kept on the heart throughout, and at no time could any disorder be detected In view of the long duration of the disease, and the well-known tendency of these cases, with extensive nodules, to develop heart lesions, it is perhaps curious that no such lesions were found.

III—ACUTE RHEUMATISM WITH PSEUDO-PARALYSIS.

THE patient, a Sikh, at 21, was seized with paralysis suddenly during the night He was brought to hospital in the morning in a very anxious state, supported by his friends, who shared his apprehensions of impending death from suffocation He could not use his legs or sit up unaided Respiration was rapid but it appeared that, though there was a true paralysis from the waist downward, the difficulty in breathing was mainly nervous, and, on the patient becoming a little reassured, the respiration became less laboured

Attempts to straighten the semiflexed legs passively caused severe pain and the patient, though he appeared to be making honest efforts to do so, was quite unable to lift them off the bed or move his toes There was severe pain in the legs, chiefly referred to the Hamstrings, and marked tenderness over the lower part of the spine

Knee jerks were absent, no ankle clonus
Plantar response *nil*

No alteration of sensation. Temperature 100
Pulse 96

In view of these conditions, I suspected that the disease was acute anterior poliomyelitis and that the paralysis would become more localised later However, it subsequently turned out that this diagnosis was rather wide of the mark

2nd Day—The respiration is now quiet, there is some restoration of movement, the left leg can be extended though the right cannot, movement about the toes and ankles is good The patient complains of severe pains over the knees and ankles, and the small of the back There is no swelling or heat in the joints

The temperature is still 100

3rd Day—Pain severe all over the legs Knee and ankle joints hot and tender The lower spine is still tender The legs remain semi-flexed and cannot be extended

4th Day—The pain is now confined to the knee and ankle joints which are markedly hot and tender

5th Day—The apparent paralysis has now completely passed off There is no pain except on movement of the joints

After this the disease ran the ordinary course of acute rheumatism. The temperature came down under salicylates on the tenth day. One other joint was affected, the elbow. There was some slight affection of the heart, relative incompetence with a soft systolic murmur. This shortly disappeared and, save for the somewhat foetal character of the sounds, which persisted for some time, there was nothing abnormal.

This attack took place over a year ago and there has been no recurrence.

One must, of course, regard the paralysis as functional, but the sudden and dramatic onset, without any signs of the governing disease was certainly misleading.

IV—TOTAL BACKWARD DISPLACEMENT OF THE LENS

The patient, a young Orakzai, complained that since he had been struck in the eye by a stone some two years previously, he had not been able to see with it.

On examination, the exterior of the eye was normal, the cornea clear and unmarked by scars. The pupil was slightly dilated, and the iris tremulous. Ophthalmoscopic examination revealed the fact that the lens was absent, from its normal situation, but a perfectly clear view of the normal fundus could be obtained no strands or remnants of capsule blocking the way. There was no sign of inflammation in any part. With suitable lenses the patient got perfectly good vision.

I presume that the blow from the stone produced what is the ideal result in the Indian operation of Couching.

GUTTATE OR NODULAR KERATITIS

BY J. GOOD, M.B.,

MAJOR, I.M.S.,

Ophthalmic Surgeon, General Hospital, Rangoon

ON April 2nd, Maung Chit Tun, aged 29 years, a Burman, presented himself at the Out-patient Department, Rangoon General Hospital, complaining of defective vision.

History—Unmarried, goldsmith by trade. Father alive, aged 78, mother aged 75, both healthy. Only brother died insane 4 years ago. Two sisters, one died of "fever". Other alive, but has dimness of vision. No history of tubercle or syphilis. Dimness of vision began 9 years ago.

Examination—Both eyes equally affected. Pupillary areas contain a number of small opaque patches, irregular in shape and size and occupying the most central position. Between the patches

the cornea are in places clear while in others contain minute dots.

Bowman's membrane is not raised over the patches. There is a clear zone inside the periphery of the cornea entirely free from opacities. Vision-fingers at 1 metre each eye. Tension normal. No anterior ciliary or conjunctival distension. Slight photophobia. Fluorescein no reaction.

Patient admitted to hospital where he remained two months. The sister was sent for. She is 2 years older than patient and presents almost the same condition of both cornea but patches are larger and vision-fingers at 2 feet only. Dimness began 9 years previously. Both state that deceased brother and sister suffered in exactly the same way and there is no reason to doubt them. In all four cases the disease did not begin until after the age of 20.

Here there is a family of four. All affected in the same way. A very careful history was taken by my assistant Dr DaCosta, and I think we can safely exclude both syphilis and tubercle. Tubercle is stated to be a cause by some writers, but both patients looked the picture of health and their parents have attained an age rarely seen in this country.

Guttate or Nodular Keratitis was first described by Gioenoeuw, who found hyaline deposits. Another observer found sodium urate. Captain Whitmore, I.M.S., to whom I am indebted for examining scrapings, did not find urate of sodium, nor did he get any growth on blood serum.

It would appear to be due to some general agent as both eyes are always affected and it is a "family disease".

In neither case was Bowman's membrane raised over the patches and a clear periphery remains. There are no nebulae and the deposits are in the anterior layers of the substantia propria.

From recorded cases it would seem that the disease is hereditary, but the parents have reached a ripe old age (Burmese, unlike natives of India, always know their ages) and are free from the disease. Aetiology is unknown.

Treatment—I tried subconjunctival injections of saline without benefit, also cyanide of mercury. Hot fomentations apparently only increased the photophobia. No treatment was of any avail.

Since writing the above another case has come under my treatment and is a Madrassai ayah with no history of dimness of vision in her family. I am not aware of cases of this sort having been recorded in the East, where they must be uncommon. Those cases were shown before the local branch of the British Medical Association and no member had ever seen one.

Indian Medical Gazette

JANUARY

150TH ANNIVERSARY OF THE INDIAN MEDICAL SERVICE, 1ST JANUARY
1764—1st JANUARY 1914

WE cannot let the January number of the Gazette which, for 48 years, has represented the work and the interests of the Indian Medical Service, go to press without recalling to our readers the interesting fact that THE INDIAN MEDICAL SERVICE takes its date as a regular medical establishment with fixed grades, and definite rules for promotion from grade to grade from 1st January 1764, or 150 years ago. The Bengal Medical Service was the first of the three Presidential Services to be founded, the Madras and Bombay establishments soon followed, but no formal orders concerning them appear to have been preserved.

In Chapter XIII of his forthcoming *History of the Indian Medical Service*, Lt-Col D G Crawford states that the Bengal Medical Service was founded by orders passed in the FORT WILLIAM CONSULTATIONS of 20th October 1763, *with effect from 1st January 1764*. These orders run as follows —

"At a consultation present

THE HON'BLE HENRY VANSITTART, ESQ
President

JOHN CARNAC, ESQ

WARREN HASTINGS, ESQ

RANDOLPH MARRIOTT, ESQ

HUGH WATTS, ESQ

* * * * *

"As there has never been any proper Establishment settled for the Appointment and Succession of the Surgeons employed under this Presidency

"It is now agreed that the following Plan shall be established regulating their Number, Rank, and Succession and Appointments and that it shall take place the 1st January 1764, viz —

"Four Head Surgeons to reside at Calcutta and have the Privilege of Company's Servants * The two first to have the Hospital Contract

* i.e., the privilege of private trade, with the use of the *Dastak*, or trade pass

"Eight Surgeons of which the four eldest to be stationed at the Factories of Patna, Cossimbuzai, Chittagong and Dacca And the other four to be Surgeons of the Army, and the whole of this Rank to succeed in Rotation to be Head Surgeons at Calcutta

"Twenty-eight Surgeons' Mates who are to succeed in their Seniority to be Surgeons Of these the eight eldest upon the list to live in Calcutta, the next Eight to be Surgeons' Mates of the Army, and the other twelve to be Surgeons' Mates of the Seapoys, one to each Battalion

"Head Surgeons and Surgeons at the subordinates† and the Army to have ten shillings a Day Pay, and the latter when in the Field to draw Captain's Batta

"The Surgeons' Mates at Calcutta to have 7/6 per Day each, those of Army and Seapoys 5/- a Day, and Lieutenant's Batta when in the Field

"Agreed that we write to the Court of Directors to send us out some Surgeons' Mates to compleat this Establishment "

The beginnings of the Medical Department in India were long before this. The Surgeons of the Company's first fleet which sailed from London in 1600 (whose names are Ralph Salter, James Lovering, Christopher Newchurch and John Gammond), are probably entitled to be considered the first Medical Officers of the East India Company. Later on the names of Gabriel Boughton, and William Hamilton are landmarks in the history of the English in India, but no Regular Service or Establishment was formed till the date given above 1st January 1764.

This historical event will be duly commemorated by the Service by a public dinner in Calcutta on 14th January 1914.

ANNUS MEDICUS, 1913

IN our remarks in January last on the events of medical and service interest during the year 1912 we referred to the territorial changes in Bengal as it affected the Medical Department. In spite of the lapse of another year no announcement up to the time of writing has been made, though it is understood that the Government of India approve of a Surgeon-General being appointed to Bengal Presidency, thus making it the same in this respect as the other Presidencies of Bombay and Madras.

† At the subordinate factories, Patna, Dakka, etc

Another important matter which still remains unsettled is the reorganisation of the military side of the Indian Medical Service. Nothing has yet transpired as to how it is to be treated as a result of Lord Nicholson's Commission.

The difficulty of getting leave is still with us. The rules both Civil and Military are liberal enough, but the difficulty is to get the leave. As we have before pointed out the necessity of qualifying for accelerated promotion and the wise and liberal provision for study leave has had the result of making men take long leave and if men take leave for 18 months or two years it necessarily follows that other men have longer to wait before their turn comes. The only way to meet this is by increasing the leave reserve. Privilege leave is also extremely difficult to get and most men only get it when combined with long furlough. We understand that it is agreed to raise the leave reserve in each province and this cannot be done too soon.

The recent results of the competitive examination for entrance to the I M S has been widely commented upon. We have nothing to add to what we have already said. We strongly deprecate the somewhat too prevalent attitude of pessimism on this matter. Much has been done for the service and the service never was more useful to India, but the fact remains that competition has seriously fallen off, this is more apparent in the I M S than in other public services, though it is still clearly seen in the choice of appointments by the Civil Service competitions and in the lack of good candidates in the now well-paid Police Department.

There can be no doubt whatever that the rates of pay for Medical Department should be raised considerably. It has always been assumed that private practice made up for the low rates of pay given. This can no longer be maintained. In a majority of Civil stations the private practice obtainable does not pay the rent of the Civil Surgeon's house. There are many and obvious reasons for this, but the important fact is that it should be recognised. Again it is an old grievance of Civil Surgeons that they should receive such a pittance (Rs. 50 to 75 in the majority of cases, Rs. 100 in a few, and Rs. 150 in a very few cases per mensem) for the arduous important and exacting non-professional work involved in the Superintendentship of a District Jail. When the Government of India last took

up this matter they made fair and liberal proposals, but were met by the then Secretary of State's reply that this could not be considered as the pay of I M S officers had recently been improved.

The pay of men in Civil employ when on furlough is far from satisfactory and it is only the lucky few who when local allowances are deducted can ever get more than £500 a year, when at home on leave. It is a serious loss for a fairly senior man to take his very necessary leave.

No account of the service during the past year could omit these points as they are so frequently discussed by men whenever they meet.

What has been called the 'Morley Doctrine' of limiting the service has, as was expected, proved in operation totally impracticable, and during the past year we have chronicled several new additional cadre appointments.

Bombay has had its Medical Bill, and in December Bengal has introduced a similar bill.

Turning now to non-service matters we have to chronicle no great or important advance in the medical world. In India plague has been less in evidence though it is still with us and shows no material signs of disappearance. The people are more used to it and more willing on the whole to adopt obvious and tried methods of prevention.

Our columns have frequently borne testimony to the wide prevalence of certain other diseases. Among the minors fever the wide prevalence of dengue has led to much discussion and opinion generally inclines to the view that the seven-day fever differentiated by Leonard Rogers is in reality dengue. Another fever long well known on the Bombay side, viz., relapsing or spirillary fever has become increasingly recognised. It is a fatal fever and has prevailed extensively in the tea gardens of Darjeeling District, in Chitral and in Bundelkund and it deserves more attention than it has hitherto obtained.

Cholera has not been widely epidemic, but the importance of personal contact and of carriers has been proved by the work of Major Greig, I M S, who is on special duty to investigate this subject. Our columns have also reported the advance made in the differentiation of the ankylostome infections in India and Major Clayton Lane has shown that (in Bengal at least), three ankylostomes are to be found, the *A. duodenale*, *Necator americanus* and *A. Ceylanicum*. It is not to be inferred that this parasitic

infection is prevalent to anything like the extent the Hookworm disease prevails in Porto Rico and other countries, but it is certainly present and must to some extent affect the labour value of coolies and others employed in the tea gardens etc, of Assam

Malaria has been quietly but carefully studied and the appointment of special officers in each Province is bound to lead to clearer and more practical ideas of the necessary steps towards prevention Meantime the freer use of quinine and the recognition of the fact that cases of malaria are seldom sufficiently or thoroughly treated is bound to be of use

The School of Tropical Medicine in Calcutta has not yet begun but the plans are ready and the land acquired, and next cold weather should see the opening of this institution which we feel sure is destined to become the leading school for research in tropical diseases The Government of India have liberally supported it, and we hope the millionaires of India will do their best to endow professorships and research scholarships We have recently seen what a large sum the London School has been able to raise and it behoves us in India to give our support to the great Indian scheme All that is wanted is money to get the best men as teachers, the material is at hand and more tropical diseases can be seen in a week at Calcutta than in all the Tropical Schools in Europe in a year

The Emetin treatment introduced by Lt-Col Leonard Rogers, I M S, for amœbic dysentery and for hepatitis is now recognised all over the world and ranks with salvarsan mercury and quinine as one of the few specifics in our pharmacopœia

As usual medical men in India have been well to the fore in authorship We may note the following books published recently —Major Overbeck Wright's *Mental Derangements in India*, Capt Green-Armytage's *Labour-room Clinics*, Major R E Lloyd's *Growth of Groups in the Animal Kingdom*, Major D McCay's Monograph on *The Proteid Element in Nutrition*, the new edition by Lt-Col C R Green & Capt Green-Armytage of Birch's *Management of Children in India*, Lt-Col R H Elliot's book on *Sclerocorneal Trichining*, L Rogers book on *The Dysenteries*, Major Wall's new edition of his book on *Poisonous Terrestrial Snakes of India*, Lt-Col B. H. Deare's new edition of Ghosh's *Materia*

Medica, Lt-Col Budwood's *Clinical Methods for Indian Students*, and Capt Bryson's *Indian Lunacy Manual* (3rd Edn), and Lt-Col S J Thomson's "The Silent India" We have recently referred to the *History of the Indian Medical Service* by Lt-Col D G Crawford, I M S (1edt) which is expected to be out early in the New Year and which will we expect become the possession of every I M S man in India

We should also not omit any reference to the new *Indian Journal of Medical Research*, which in luxurious fashion ably caters for the Research Laboratories in India

Current Topics

THE RECENT CHOLERA EPIDEMIC AT SIALKOT.

A REPORT which is ushered in with the following remarks by the Head of a Province is likely to be of interest The *Punjab Gazette* for October 31st contains an account of the recent violent epidemic and the Government Resolution commences as follows —

The Lieutenant-Governor has read with deep interest the report of the Deputy Sanitary Commissioner on the recent epidemic of cholera at Sialkot, which was one of the most serious that the province has known in recent years His Honour trusts that the report which is published with this resolution will be widely read, and he commends it especially to the notice of those who are interested in sanitary progress It will, he thinks, bring home to all who read it the difficulties which sanitary reformers have to face in the prejudice, apathy and even opposition of the people for whose good they are working

The report has been written by Capt R T Wells, I M S, the acting Deputy Sanitary Commissioner The first case occurred in a man, who had just returned to Sialkot from Lahore, on 30th July 1913 He died on the day of his attack The outbreak lasted till about 4th September, about 1,465 cases occurred, the Mohamedan portion of the population having suffered most severely, due to their *roza* fast and then consequent disinclination to leave their homes

A special cholera staff was soon organised, but a great amount of opposition was encountered especially to disinfection of the wells—

"The procedure was to put permanganate of potash (1½—3 oz) in each well in rotation at intervals of not more than seven days—no light undertaking as there are some 270 wells in the city

This rendered the water distinctly pink for 24 hours or more after treatment

A good deal of opposition was encountered, particularly by the Sub-Assistant Surgeons, all of whom were Hindus, when unsupported by the presence of a superior officer The people, particularly the women, objected to the inconvenience of having their own particular well put out of use for 24 hours once a week and often declined to use the water for some days after treatment Latterly it was arranged that 100 buckets should be drawn off from each well by the municipal water

carriers 24 hours after disinfection and before the water was brought into use.

Galvanised iron buckets were issued for drawing water instead of the usual leather buckets (*bholas*)".

Free treatment was offered, but most people preferred the ministrations of the *hakim*. L. Rogers' treatment along with hypodermics of pituitrin was the method favoured, notes of only 46 cases could be collected and the results were encouraging. Hypodermic injections were looked on with great suspicion and the saline infusions could seldom be used. Under such circumstances modern methods of treatment are only thrown away.

We must, however, quote from the report itself—

"The fly nuisance was much in evidence, the protection of food-stuffs and the free use of quicklime in the drains and in corners perhaps did something to mitigate it, but of course ample feeding and breeding grounds for flies remain."

Immediate disinfection of dejecta, etc—Through the continuous efforts of the special Staff and by means of pamphlets posted and read out in public places and distributed broadcast, an endeavour was made to impress upon the people the essentially infectious nature of the disease and the consequent necessity for extreme care in the treatment of all articles liable to contamination with the discharges of the sick.

The efforts, unfortunately, produced little good effect, and the fact was forcibly brought home to us that measures depending for their success on the intelligent co-operation of the people are of very limited application.

Looking upon our account of the bacterial origin and the mode of spread of cholera as fairy tales, people made little of our directions for its prevention.

One phase of the popular attitude is well represented in a remark made to one Sub-Assistant Surgeon. As he was washing his hands in phenyle lotion after touching a cholera case, one of the sick man's friends was indignant at the sight, exclaiming 'you have been touching a man and not a reptile, why do you then wash your hands?'

Nor was it only the least educated who failed to act on our advice. I was told that one of the medical practitioners in the town, a retired Hospital Assistant, when his wife was sick of cholera, took no precautions as regards disinfection of the patient's surroundings and on her death sent the clothes direct to the dhobi.

People made no attempt at any sort of isolation of the patient, indeed sickness in the house is generally an occasion for a concourse of all the patient's friends and relations.

The lack of any home sanitary arrangements in case of sickness was distressingly obvious, the use of gumkhats or other receptacles being exceptional.

The stools were generally passed on the floor or into the clothes and then, perhaps after admixture with earth, ashes or quicklime, collected by the sweeper in the household latrine, from which the refuse was finally thrown out into the street to await the coming of the kura contractor's donkeys.

Others, less particular, casually mopped up any debris or vomited matter which they happened to notice, or left them to soak into the ground.

Although, on the whole, quite good natured, the people were often inclined to resent any attempt at interference in their more intimate household arrangements.

"Thus we were powerless to stop the infection at its source."

It is curious to read of such ignorant mediævalism in a country which is supposed to be educated and which talks so much of the benefits of education. Such people are still in the dark ages as regards sanitation.

THE HEALTH OF INDIAN STUDENTS

Under this title Dr Chunilal Bose, the officiating Chemical Examiner to Government of Bengal has written a useful little pamphlet on the health of students which is well deserving of the attention of all teachers in India.

He calls forcible attention to the degenerate physique of many students in Bengal and apart from climate he attributes it to an "irordinate love of text-books," "a mortal anxiety to pass the University Examinations," and "the utter neglect of physical exercise" insufficient diet, overcrowding and other insanitary conditions, certain evil habits. Early marriage and consequent worry and anxiety also play a part in undermining the health of students. The following extract is worth reproducing—

"But if I have blamed the students for their partiality for brain work and general apathy in relation to physical exercise, the authorities who are responsible for fixing the curriculum of studies for our students are not above criticism, in that they have created circumstances which give rise to such an undesirable state of things. For boys of tender age are now a-days given such a variety of subjects to study and so many books in each subject that it is impossible for most of them to digest and assimilate this complex mixture and to be ready with their daily lessons without very great strain on their system and without sacrificing much of the time which they ought to spend in open air and out door games, but which they cannot do for the severe burden of work thrown on their shoulders. It is the opinion of many old and experienced teachers whom I have had the privilege to consult in this matter that our school boys and college students are now given more work to do than they can possibly finish within the prescribed period of their study and this naturally induces them to curtail their time for exercise, rest and recreation as much as possible. On more than one occasion persons familiar with the conditions of life of our students and, therefore, competent to give an opinion on the subject, have raised their voices against the heavy amount of intellectual work now a days demanded of our boys."

We can strongly recommend this practical lecture to all interested in student life in India. It is prefaced by a note from Revd W S Uiquhart, of the Scottish Churches College.

THE PATHOGENESIS OF CANCER

Dr DeKeating-Hart of St Luke's Clinic, Paris, has in the *Practitioner* (Oct 1913) a very useful article on present day news of the origin of Cancer—we have only room here to reproduce his conclusions—

1. The parasitic theory is given up, not as being impossible, but because, according to the present state of knowledge, it is unlikely and irrational, in microbial diseases, the injured cell leaves the virus intact, and one would, therefore, have to imagine a parasitism contrary to the histological laws of higher organisms.

2. The absolute similarity is recognized of the conditions which govern the grafting of normal and cancerous cells, and determine failure or success.

3. It has been shown that ectopy, and the metastatic capability of cancerous cells are the consequences of their acquired properties, and of their cellular construction.

4. The purely hypothetical and inadequate interpretations of the greater number of authors are put aside.

5 The irritative theory is accepted as being the only one which embraces all the known facts in cancerous etiology.

6 The biological conditions, created by irritation in the cells submitted to it, have been studied.

7 The reproductive power of cancerous cells has been proved, and their nutritive requirements demonstrated.

The correct inference from these is, I believe, that *cancer is produced by cells overcultivated for a long time in the irritated zones of the organism*, they are like hothouse plants, which, as a result of slow and prolonged increase of heat and food, acquire, after a variable period, the hereditary characters of *over production and over feeding which distinguish them*. Ectopy, the invasion of healthy peripheral tissues, is accounted for by the same intensity of multiplication, which breaks down the normal barriers by mechanical pressure. Metastatic effects are due, at the same time, to the increased vitality of the cells easily carried away in the lymph and blood streams, owing to the want of intercellular cohesion peculiar to cancerous formation."

THE MARMOT AND MANCHURIAN PLAGUE

In the October issue of the *Journal of Hygiene* (Vol. XIII No. 3, p. 237) Dr. Wu Lien-Teh (or G. L. Tuck) the Chinese Director and late President of the International Plague Conference (1911) has an interesting report on the work of the Chinese prevention service in carrying out the recommendations of the Conference. There is much of great interest in the report but we can only spare space for Dr. Wu Lien-Teh's conclusions especially those on the part played by the taibagan or marmot (*Acastomys bobac*) in the diffusion of plague. This rodent is widely diffused in the northern hemisphere, but in India it is confined to the Himalayas and we have seen them among the rocks on the paths leading up to the Nathu and Jelap passes into Tibet. Dr. Wu Lien-Teh writes as follows —

"To conclude that a man whose occupation is that of a Taibagan hunter and who takes plague has been infected from a Taibagan is comparable to concluding that a man who sells rice and who develops plague has been infected from the rice. In the latter case it is possible that the rice through the rat flea was the source of infection, but if, without some proof that this were so, the statement was made, such a conclusion would be at once condemned as unjustifiable. From the above it seems to me a pity that responsible authorities and medical men should be so obsessed with the unestablished idea of the great infectivity of the Taibagans or to hinder the transportation of healthy Taibagans for important scientific research at our headquarters laboratory at Harbin, an experience which I had in March of this year.

1 Even though the Taibagan occasionally suffers from Plague, the epizootic is never extensive, and the animal does not play nearly so important a rôle in the spread of Plague as does the Rat. Indeed its direct relationship to human plague may be considered negligible. Moreover, the mode of living and habits of the Taibagan are very different from those of the Rat, for example, while the Rat is a more or less domestic creature in close contact with man, the Taibagan is the reverse.

2 From the writings of Russian authorities, it appears that Plague has existed for many years in various parts of Siberia, sometimes in the bubonic form, sometimes in the pneumonic form. These places may be looked upon as endemic foci. In 1910 it is believed

that pneumonic Plague appeared in the Russian Uial District long before it made its appearance at Manchouli and developed into that great Manchurian epidemic. During the latter half of 1911 this form of Plague was present in the Kirghiz settlements. In these districts, from October 1911 to February 1912 over 200 cases of Plague occurred. No case of Plague, in man or animal, has occurred in Manchuria since the epidemic of 1911.

3 From this report it is obvious that statements of the occurrence of Plague among men or animals should be believed only when they come from responsible sources, that is, after proper medical and scientific investigations."

SALVARSAN IN SYPHILIS

The Surgeon-General, U. S. Army, has published a valuable bulletin (No. 2, Washington, Government Printing Office) entitled *Studies on Syphilis* by Capt. C. F. Craig, and Capt. H. J. Nichols of the Medical Corps, U. S. Army. The following summary of the value of salvarsan is of considerable interest —

"(1) During 1911 and 1912, 5,709 cases of syphilis have been treated with salvarsan by 224 medical officers of the Army. In 1911, there was an increase of 60 per cent of cases treated over previous years. In 1912, the rate was reduced by 37.5 per cent and fell to nearly the usual rate for the previous years.

(2) Nine thousand five hundred and eighty-five injections were given, 1,455 by intramuscular, and 8,130 by intravenous method, 88 per cent of medical officers favor the intravenous method.

(3) Immediate complications, 1.3 per cent by intramuscular method, 0.9 per cent by intravenous method. Remote complications, 0.6 per cent (nervous relapse).

(4) The death-rate was one in about 5,000 cases.

(5) Nearly three-fourths of the medical officers favor the closed method for intravenous injections.

(6) Over one-half of the medical officers favor the short or radical treatment of the disease.

(7) One half of the medical officers favor the salicylate of mercury for injection.

(8) Over one-half of medical officers favor a short period as a standard of cure.

(9) 9.3 per cent of cases are believed to have been cured.

(10) 96.6 per cent of medical officers state that the principal advantage of salvarsan is its immediate effect.

(11) 86.8 per cent. of medical officers favor the continued use of salvarsan and neosalvarsan on a large scale."

THE CALCUTTA HEALTH OFFICER'S REPORT

This valuable and well written report is submitted by Dr. H. M. Clarke, the Health Officer of Calcutta.

It is exceedingly well illustrated by charts, diagrams and contains much of interest.

The remarks on infantile mortality are very important and the following extract shows the great need of largely increasing the number of trained midwives. The extract is not to the credit of an advanced community like that of the second city in the Empire —

"The principal causes of death during the first week are prematurity (371), debility at birth (809), and tetanus neonatorum (545). The last mentioned is to a very large extent due to the ignorance and superstition of the native *dhai*. Lying-in women, being considered unclean, are confined in special rooms wherever this

is possible Only too frequently the labour is conducted in insanitary and filthy godowns or out houses, light and air being shut out as much as possible Amongst the poorer classes it takes place on the bare mud floor which is "cleansed" by smearing it over with cow dung Amidst much surroundings the cord is severed with a splinter of bamboo, ligatured with a piece of thread and smeared with oil and ashes, and a bit of old rag applied as dressing What is the result? Tetanus neonatorum kills of more than one fourth of the infants who die during the first week, and nearly half of those dying between the ages of 7 days and one month In other words 33 per cent of the deaths amongst infants under one month is preventible! Such state of affairs ought not to be tolerated in any civilised community Considering the excellent results obtained by the Corporation Midwives working under precisely similar conditions, it is astonishing to find that Dr. Pearse's proposals to increase the number has been negatived on several occasions At present we have only 4 Midwives, one for about 72,100 of the female population Even with a larger staff the native *dhais* would almost certainly continue to attend a large number of cases Obviously it is necessary to try and enlist their services in any campaign against tetanus I propose to distribute envelopes or small tin-cases containing sterilised ligatures and dressings with brief instructions as to how to use them to all the *dhais* known to be in practice The cost would be trifling and it would, I think, be a very good idea to offer prizes to the *dhais* using the largest number"

The following remark is instructive —

"As is well known the notification of Infectious Diseases is a dead letter in Calcutta, that is to say, the Health Department instead of having hundreds of willing agents in every quarter of the City, has to work practically alone and unaided in combating outbreaks of disease It is hardly necessary to point out how seriously the activities of the Department are crippled In many cases, as I have already pointed out, no doctor is called in, so that 'even if notification was rigidly enforced, we should not get complete information as to the prevalence of any particular disease Still, although this undoubtedly lessens the value of notification in Calcutta it by no means absolves the local profession from the discharge of their obvious duty"

Dr. Clarke has the following useful note on Dengue —

"Although only one death was directly attributed to Dengue, the outbreak was so widespread in its character that it deserves more than a passing mention The cases I saw were absolutely typical, and though I was greatly puzzled by the first case till the rash appeared, a reference to Roger's classical work soon made the nature of the case clear The duration of the acute febrile stage, the 'three day fever' of the older writers, the onset with joint pains and erythema, and the profuse measles rash coming out in crops after the subsidence of the fever, differentiate this from all other exanthemata All classes of the community, Europeans as well as Indians were attacked, a characteristic feature being the exceedingly rapid spread Hardly a household seemed to escape, and many thousands of cases must have occurred Calcutta has been visited by severe epidemics of Dengue on more than one occasion The last epidemic, according to Rogers, reached Calcutta in October 1871 from Zanzibar and continued prevalent throughout the cold season In April 1873 it increased again and during the following month continued as a widespread and universal epidemic which extended over the whole of India A severe outbreak, which apparently originated in Hong-Kong in 1902, affected Madras very severely but Calcutta entirely escaped Although the large majority of the cases during the 1912 epidemic were mild and convalescence was speedily established, in a certain proportion of cases marked

debility and distressing joint-pains continued for some weeks Relapses, often within a few weeks of the primary attack were fairly common

The disease first appeared in the north-western part of the city affecting Ahiritola, Savabazar, Jorabagan and the adjoining localities Since May last cases of epidemic fever were noticed in these places and since July the epidemic has spread very widely almost all over the town and at present there is scarcely any part in Calcutta where a large number of cases has not been found The disease has been found among the rich and poor alike and has attacked all classes of the community

I have recorded 203 cases of the epidemic fever taken from 19 families All these cases have occurred between the 16th June and the 20th July and I have got the total number of 203 cases out of a total of 298 persons constituting those families, all servants included I am not in a position to strike an actual percentage of persons attacked, but a guess at 75 per cent will not be far from the truth Out of my 203 cases, 106 were males, 76 were females, and 21 were children below 7 years of ages Out of these 21 children, 6 were below 1 year of age"

There is much else of interest in this valuable report, but space forbids us to give more than the following comment on the water-supply of the city —

"Some of the members of the General Committee having expressed their views against the advisability of adopting the above scheme, the matter was referred by the Committee to the Medical Board who, after mature deliberation gave it as their opinion that the scheme drawn up by the Health Officer was in accordance with modern scientific methods and was a very useful one for the routine examination of water The matter was, however, again referred to Lieutenant-Colonel Rogers, M.S., the Bacteriologist to the Government of Bengal, who endorsed the views of the Medical Board but suggested that the total number of colonies per cc in the river water and in the filtered water and the percentage of reduction of bacteria per cc and the percentage of bacteria remaining per cc in the filtered water, should also be noted

All bacteriologists in this country agree that the standards adopted for the colder countries of Europe are not applicable in general in this country As there are not sufficient data yet available for the purpose of compiling Indian standards, it was decided that in order to interpret the significance of the presence of lactose fermenters in varying quantities of water, an arbitrary standard was required As a temporary measure, that laid down in the Annual Report for 1911 was adopted, namely, that filters passing water containing no lactose fermenters in 5 cc are considered as working satisfactorily and that filtered water fermenters even in 10 cc may be considered as fair in quality When containing lactose in lesser amounts, further experience is required as to where to draw the danger line It may also be noted that it is very unsafe to rely exclusively on the figures for lactose fermenters in a sample of water without taking into account the complete results of the chemical and bacteriological examinations The indications of the bacteriological test come in where the chemical analysis fails, and both should be taken into account before coming to any conclusion

The total number of colonies in the filtered water was generally below 100 but not infrequently the countings were large and interfered with by the growth of "spreading colonies" of the Mesentericus group, thus making separate determinations necessary

140 samples of the filtered water were examined for *Comma bacilli*, but in none of the samples these have been found"

MEDICAL RESEARCH IN MALAY STATE

THE Institute for Medical Research at Kuala Lumpur is well known for its good work especially in regard to beri-beri. It has a good staff including Dr A. Fasei, the Director, Dr Stanton, the Bacteriologist, Dr. Fletcher, Pathologist and two Chemists.

The Report of the work done in 1912, now lies before us and is full of interesting matters. The subject of polished rice and Beri-beri is fully discussed and we make the following extracts —

"Harmless and harmful rices can readily be distinguished by simple inspection, but the definition of unpolished and polished rices on the basis of histological differences alone would not suffice for practical purposes, and it is necessary to have, in addition, a chemical standard. The various constituents of the rice-grain are not distributed uniformly throughout the cells, and it is for this reason that certain of these substances are available for the purpose of a standard or as an indicator of the extent to which the grain has been polished.

The greater part of the fat is contained in the cells of the subpericarpal layers, salts and protein are also relatively more abundant in the cells of these layers than in the cells of the central portion of the grain. It is obvious, therefore, that the estimation of any one of these substances would answer the purpose, the one selected must be suited to rapid and accurate estimation, and there must be such a difference in the amount contained in the two kinds of rice as to allow for a reasonable margin of error.

The ravages of beri-beri always have been, and always will be, greatest among the labouring classes, who prefer polished rice, and whose financial position is subject to fluctuations brought about by economic conditions over which science and medicine have no direct control. So long as these people are in regular employment and in receipt of good wages they can afford to supplement their rice-ration with other articles of diet, and in this way prevent the occurrence of beri-beri. But when adverse conditions prevail, their dietary becomes almost wholly a rice one, and soon afterwards beri-beri makes its appearance among them.

The use of unpolished rice at all times by these people would prevent the disease occurring among them, but this desirable result will be achieved with difficulty, because to those who have been accustomed to the use of polished rice, unpolished rice has an objectionable appearance. The association of whiteness of food stuffs with purity has, even in countries other than these, been attended with disadvantageous results. The education of this class of people to the advantages to be derived from the use of unpolished rice must be a slow process, but it is a moot point whether, on the whole, this plan might not prove to be the most successful.

Undue haste in the application of the results of scientific research to practical and actual conditions has so often in the past been attended by unsatisfactory and even disastrous results, that anything in the nature of sumptuary legislation should be introduced only after grave consideration. It has been proposed to make the use of unpolished rice compulsory by legislation. With this object in view it has been suggested that the importation of polished rice should be prohibited, but despotic legislation of this kind would be dangerous, impolitic, and in certain places a serious menace to trade.

Another proposal has been to tax polished rice. Such a tax to be in any way effective would require to be a heavy one and would be most troublesome to apply. If some form of legislation be essential, then, in the conditions in which we find ourselves in the Malay

Peninsula, a tax upon polished rice at the point of distribution appears to offer some advantage. To accomplish this it has been proposed to license dealers in polished rice, but it is doubtful if even this method in actual practice would yield results commensurate with the trouble entailed in its application.

It is necessary to emphasize the fact that a harmless rice can be converted into a harmful one by an unsatisfactory process of cooking, and energetic action is required in order to secure the cooking of rice in ordinary pots and to do away with all apparatus in which the rice is cooked by steam under pressure.

The following extract has been successfully used for the treatment of beri-beri cases —

Believing, as we do, in the clinical and pathological identity of beri-beri and *Polyneuritis gallinarum*, it was decided, in the first instance, to test the value of the remedial agent on fowls suffering from polyneuritis.

Experiments previously recorded have shown that the active substance is soluble in water and in 91 per cent alcohol. In alcoholic solution it retains its activity unimpaired for months, and the first test was carried out with an alcoholic extract prepared in the following manner —

1 Sifted polishings were packed in a percolator and the fat extracted by means of petroleum ether.

2 The extracted polishings were freed from ether by exposure to the sun.

3 One part of fat free polishings was macerated and frequently stirred in 4 parts of 94 per cent alcohol acidulated with 0.3 per cent of hydrochloric acid for one week.

4 The mixture was filtered and nearly neutralized with sodium carbonate.

5 The slight precipitate, formed on partial neutralization, was filtered off and rejected. The filtrate was concentrated under reduced pressure (temperature 60°C) to a small volume.

6 A little water was added to the residue, and the fat, present in small amount, removed by means of petroleum ether.

7 The fat-free fluid was concentrated nearly to dryness at a temperature not exceeding 60°C, and the residue dissolved in water and alcohol in such proportion that the final product contained 50 per cent of alcohol, and 1 c.c. of this fluid represented the soluble materials extracted from 10 grammes of fat-free polishings.

Cases of polyneuritis were obtained in the ordinary way by feeding fowls on polished rice, and as soon as an animal showed distinct evidence of the disease, received the remedial agent, throughout the treatment the fowls were fed on the rice, the consumption of which had given rise to the disease.

Experiments are now in progress with a view to determining if the remedy can be prepared by a less expensive process, as by employing weaker alcohols or water. But the less alcohol contained in the menstruum the more saccharine material passes into solution. Whether or not the presence of this substance is disadvantageous we have not yet been able to determine. A watery extract resembling malt extract in appearance and consistence might prove valuable both from the curative and nutritive standpoints. For those cases of beri-beri with gastric disturbance it would be desirable to employ an extract containing a minimum of non-essential substances.

By either of the methods described an effective liquid extract can be prepared of which a dessert-spoonful represents the material obtained from two ounces of fat-free polishings, the daily dose for an adult suffering from beri-beri.

The report on leprosy is of considerable interest. The work of Beauchamp-Williams, E. R. Ross

and of Bayon is reviewed and the following conclusions are drawn —

Twenty-four patients have thus been dealt with and two hundred and forty-six inoculations made on various culture media. In no single instance has a culture of the leprosy bacillus been obtained. By certain process of staining and fixing it is possible to find in films that the non acid fast contaminants, streptothrixes and bacilli approach in slenderness the leprosy bacilli, but on further investigation it has been found that they have no genetic relationship with that organism. Cultures obtained after incubation for three or four days are invariably those of contaminants, those obtained after prolonged incubation are contaminants which either have been introduced accidentally or have grown through the cotton-wool plugs.

There are difficulties in inducing strongly parasitic organisms to adapt themselves to saprophytic conditions. When investigators overcome these difficulties it is customary for them to describe their methods in detail so that the work can be repeated by any worker possessing the necessary facilities and skill. The claims made by the original investigator are tenable provided that their accuracy is confirmed independently and the results obtained are uniformly consistent. But the results obtained by recent workers on leprosy are not consistent. The number and variety of organisms described as having been cultivated from the leprosy bacillus are wonderful; they are certainly pleomorphic. From mustard seed it is impossible to grow on one occasion a fir tree and on another occasion a rose unless the mustard seed has been mixed with the seeds of those other plants.

There is a useful report on plague and plague rats. Sporadic cases of plague have been met but the disease has fortunately not established itself in Kuala Lumpur, though plague infected rats have been found frequently. The following note on blackwater fever is of interest —

Of recent years, concurrently with a large influx of Europeans and of Indian labourers, the opening up of considerable areas of land for rubber-planting and a great increase of malaria throughout the country, there has been a number of cases of blackwater fever, a disease hitherto almost unknown in the Federated Malay States. During the past twelve months material was received on nine occasions for confirmation of the diagnosis of blackwater fever.

There are also interesting accounts given in the report on the Anophelines of Malaya. The report is an excellent one.

THE COMPOSITION AND SIZE OF MESH FOR WIRE SCREENING

The following practical note is taken from *Studies in Relation to Malaria* by Dr S. T. Darling, of the Panama Canal Commission —

Two extremely important factors in the use of wire screening for protection against mosquitoes are, first, the size of the mesh and, secondly, the chemical composition of the wire used. In regions where it is only necessary or desirable to protect against anophelines a No 16 mesh screening (16 holes to the inch) would answer the purpose, and where, as in this region, it is necessary to protect against some of the smaller varieties, such as *Stegomyia calopus*, a No 16 mesh would be practically safe, but not absolutely so. The following experiments were conducted to determine the varieties of mosquitoes which would, under stress of circumstances, pass through a No 16 mesh-wire screening. Out of several hundred mosquitoes, the following

common varieties were able to make their escape through a No 16 mesh wire —

	Number of specimens escaped
<i>Stegomyia calopus</i>	
Males	10
Females	6
<i>Culex cubensis</i> , male	1
<i>Culex relictus</i> , male	1
<i>Culex exhalans</i> , female	1
<i>Aedes angustivittatus</i> , female	1
<i>Uranotaenia lowii</i> , female	1

No specimens of *Anopheles albimanus* or *A. pseudopunctipennis* escaped through No 16 wire-mesh screen, although several hundred were tried. The methods adopted were as follows —

A A square wooden box, well ventilated, with fine crinoline gauze screening on two sides, and glass on the other two sides, with a central replaceable partition, covered with No 16 mesh-wire screening, was constructed. Several dozen mosquitoes at a time of the above varieties were liberated on one side of the partition, without food or water, and on the opposite side, close to the screen partition, were placed water, banana, candy, sugar, and raisins as bait. Only three mosquitoes, out of several hundred of several varieties, passed through the No 16 mesh partition under the conditions of the experiment. As the space including the mosquitoes was about one half of a cubic foot in volume, and as there were a few recesses in which the mosquitoes could hide, an electric light bulb was hung in such a position at night that the mosquitoes would be attracted by it, but this did not favor the passage of mosquitoes through the screen. Tobacco fumes were passed into the mosquito compartment with a rubber-bulb apparatus, and while this excited the mosquitoes, it did not cause any of them to escape through the screen. When a person's arm was introduced into the compartment close to the No 16 mesh wire partition, it did not induce the mosquitoes to escape through the screening.

B Next a lantern chimney, covered on one side with fine mesh crinoline gauze, and on the other side with a metal collar, holding in place a piece of the No 16 mesh-wire screening, was partly filled with various mosquitoes and placed near the same bait, as before, under a large glass bell jar. Eighteen mosquitoes escaped from the chimney through the No 16 mesh screening into the surrounding jar. The closer quarters and the absence of resting places in the chimney evidently favored the escape of mosquitoes through the wire screening. On one occasion, by passing a gust of air through the lantern chimney jar, a male *Culex* was helped through and escaped.

The conditions in the experiments were all rigid and more extreme than those under actual conditions where mosquitoes are trying to enter a screened house from the open.

The chemical composition of various screening material used was investigated by Dr R. W. Nauss. Screening of excellent quality was compared with that which had deteriorated more or less rapidly and analyses of screens and their incrustations made to determine the factors concerned in its corrosion. In the investigation considerable attention was paid to the analyses of the efflorescence or incrustation formed on the screening for the determination of the constituents involved in the corrosion. The specimens presenting the highest degrees of deterioration furnished the largest amount of incrustation. The deterioration of the screening is largely due to the presence of iron in the brass alloy, plus the influence of a hot, moist atmosphere.

Observations continued over a period of eight years on screening made of copper and zinc with a composition nearly —

Copper	84.92	89.94	84.83	88.59	95.85
Zinc			14.90		4.15
Iron			0.06	0.04	0.8

have shown that these resist the corroding actions of a hot, moist climate much better than screening made of brass with an average composition of Copper, 65, zinc, 35, iron, 1. Tests were made of the durability of four kinds of wire mosquito screening exposed at two locations A Close to the sea, exposed to salt laden winds B Near the sea, but with prevailing land breeze, free from salt It was desired to determine the effect of moist air and moist salt air on screening of different composition Samples of the wire were first submitted to chemical analysis No 1, a straight brass screen No 2, nearly pure copper No 3, a phosphorus bronze alloy No 4, galvanized iron When exposed to the air, where the prevailing winds are warm and moist, though free from salt, the galvanized iron and brass screening, corroded rapidly, while the copper and bronze screening resisted deterioration admirably There would seem to be no advantage in using the more expensive bronze wire in this location The exposure of screening of identical composition to moist salt air gave somewhat different results, for while the galvanized iron, brass, and copper screening became badly corroded, the bronze screening resisted these changes to a much greater degree It is concluded that screening intended for use in the tropics, exposed to heat and moisture, should have a high copper content, higher than brass, and be as free as possible from the presence of iron

Reviews.

The Dietetic Treatment of Diabetes.—By B D BASU, Major I M S (retired) Fourth Edition, Revised Panini Office, Allahabad, 1913 Price Re 18

SINCE its first publication in 1909, Major Basu's little book has passed through three editions and the fourth, revised and enlarged now appears.

There is no doubt that diabetes is an extremely important disease in India—it is especially the disease of the educated classes of Indians, men well-to-do, and occupied in various important professions or trades It is not a disease of the lower classes, and according to Major Basu it has been known in India for many centuries, since the days of Charaka and Sushruta.

Major Basu wisely calls attention to what he calls the *meglycosuric stage*, where the chief symptoms are dyspepsia, constipation, burning feeling in hand and feet, polyuria or nocturia Oral sepsis is common as are also piles and hydrocele The author believes that diabetes is a form of alimentary toxæmia—but when he refers to the 'exploitation of wheat' as a contributing cause surely he is wrong, as the poorer classes suffer infinitely less than the well-to-do *bhadra log* Malaria may possibly have some effect, but surely there is something more than "oral sepsis, piles, errors in diet, worry and anxiety This hardly covers the whole ground and does not explain the relative exemption of the poorer classes, nor can we see the advantage of "the system of yoga" beyond the fact that low diet will certainly benefit any alimentary toxæmia

Major Basu is a strong believer in the advantages of a vegetarian diet, but as the diseases

has been common among Indians of the better class for centuries we cannot see how any recent changes in India in the way of using more meat, etc, can have had any effect Cocoanut oil and cocoanut water are also prescribed by Major Basu—and no doubt the fats contained in this oil are useful

The chapter on diet will prove very useful to the practitioner in India The book is certainly not a convincing one, but the reader will learn much from it and we recommend them to obtain and read it

"The Modern Treatment of Nervous and Mental Diseases"—(2 vols Price, Rs 37 8 per set) Edited by WHITE and JELLINE. Published by Messrs Lea and Febiger, Philadelphia and New York Agents in India Messrs Butterworth and Co, Calcutta

THIS work is probably unique in being the first product of the collaboration of specialists in more than one country It forms a homogeneous whole, one article leading naturally up to another, which renders it an easy work to follow, pleasant as well as interesting to read and a strong testimony to the whole-hearted collaboration of those writing the various articles

The subjects dealt with cover an enormous field and the capable handling of their various aspects, medical, medico-legal, medico-social, eugenian, etc, renders it a most useful and interesting work as well for the legal and educational professions and the lay reader, as for the medical profession

From the medical point of view it gives a minute and full account of all nervous and mental conditions, even the most trivial, such as headaches, receiving full and careful handling, and it is well worth careful perusal by every member of the medical profession not one of whom will fail to find untold points which will help him in his work and prove of immense value to himself and his patients

The subject of prophylaxis is well and carefully handled under every entity dealt with and whether physician, surgeon or specialist in nervous derangements the reader cannot fail to profit by his labours

The question of eugenics is capably treated with throughout the book and a sound utilitarian view of the subject is given which should be of the greatest benefit to all interested in this question

The influence of the medical attendant's manner and bearing on the patient, the bad effects of too optimistic a prognosis and other similar points are skilfully handled and should prove of great value to the young practitioner

The whole aim of the book may be summed up in the old saying "prevention is better than cure," and in this lies one of its chief values for the general practitioner as it is on him, in the majority of cases, that the inception and main burden of prophylaxis falls.

The importance of metabolic and bacterial toxæmias as ætiological factors in many types of mental or nervous disorders is well brought out, though admittedly our knowledge of the direct sources of these is as yet small and based, in most cases, mainly on conjecture. This however is no reason for keeping them in the back ground but really one for bringing them forward, for the more widespread the recognition of their importance as ætiological factors becomes the more research will be begun on these lines and the sooner are we likely to arrive at some definite knowledge and serum or vaccine-therapy for a large number of such cases which at present are treated on merely symptomatic or empirical lines.

Psycho-analysis is here confined to its proper sphere, viz., cases of neurasthenic or psychasthenic origin. The subject is carefully dealt with and this section should be of interest to those unacquainted with the theories and doctrines of Freud. Though admitting the soundness of these, as explaining the origin of many of the physical and mental symptoms in such cases, one cannot but help feeling that as a routine method of treatment it is undesirable.

It is purely symptomatic and makes no attempt to deal with the condition of nervous instability and debility which allows this condition of abnormal balance between the subconscious and the conscious minds. Moreover one can not help feeling that it is too near akin to hypnotism—the method of word association, for instance with its accompanying conditions, which we are told "is commonly employed as a first step in the analytic treatment" seems in all probability calculated to bring a large percentage of such cases under sub-hypnotic conditions. To vaunt it therefore as a method of treatment seems wholly wrong.

True you may remove one symptom by its means, but it is questionable if you remove the underlying weakness of the nerve-cells and fibres by doing so, and indeed, if we consider it solely from a psychological aspect, far from strengthening the will by such methods it seems probable that in many cases it will be weakened by the sub-hypnotic conditions so likely to be brought about. Moreover, the method seems wholly unnecessary unless it be for the production of this sub-hypnotic state. If the medical attendant has sufficiently gained the confidence of his patient, surely, unless hypnotism underlies this method of psycho-analysis, a recognition of the facts that sexual perversions exist, and often in the unluckiest cases, and that mental pain may under certain conditions be transformed into some physical manifestation will suffice to provide him with a few quite tactful questions which will bring forth much useful information as can be obtained by any of the psycho-analytic methods in vogue, which, if one may judge from the cases and reports appearing in medical journals, seem, at any rate in unskilled hands,

more than likely to end in the "Reductio ad absurdum."

The theory and doctrines of Freud are on the whole universally accepted as explaining the origin of many of the symptoms in neurotic, hysterical patients, and, however much one may disagree with psycho-analysis as a method of treatment and the immense applicability imparted to the terms "sexual," etc., a knowledge of these principles is well worth a little expenditure of time and trouble by the medical practitioner and in these volumes he will find them clearly and carefully expounded.

The manner in which psychological causes are worked in and levelled up with physiological defects and toxæmias is admirable and a great step towards extending our present knowledge of such conditions and bringing specialists on these subjects into the whole-hearted collaboration by which alone we can hope to unravel a subject so enwrapped in conjecture and supposition. In this connection but one chapter more might have been added, though with a work so admirably conceived and carried out one cannot but feel diffident in making such a suggestion. Still a knowledge of the neuron-theory, and the valuable lessons to be learnt therefrom as to the origin and transmission of nervous impulses throughout the body is important as a means of materialising the researches and deductions of the psychologist, pure and simple, and harmonising the results of his researches with those of other scientists who approach the subject more from its physiological or pathological aspect. The workings of the mind, whether "conscious" or "unconscious," must after all have origin in the nerve cells of the brain and hence to come to a proper comprehension of the mental powers of mankind it is essential that we should have as firm a grasp as possible of the anatomical and physiological details of this mechanism.

The section on syphilitic diseases of the nervous system and their treatment by salvarsan and neo-salvarsan give the reader a clear idea of the scourge this disease is to humanity, how it can best be treated in its various forms and the best methods of prophylaxis. It is of special interest now in view of the movement which is being originated to combat this pest in a common-sense manner, in place of, by impossible legislation or completely ignoring it as has been the case up to date. The writers condemn, and rightly too, the "Anglo-Saxon pridey," which has so long led to this disease being kept, by Englishmen, as a skeleton in the cupboard and, it is to be hoped that the movement now originating in England may soon be elaborated and some definite action taken to if not wholly eradicate at least greatly minimise the incidence of this disease in its multitudinous forms and lead the general public to a knowledge of its baneful effects on subsequent generations and thence to a modified eugenic standpoint which will prove of untold benefit to posterity.

The section devoted to surgery of the nervous system is full and carefully detailed. Localisation symptoms are carefully enumerated and the technique of the most up-to-date operative procedures fully given. Surgeons should find this section of great assistance in their treatment of cases of this type.

The illustrations are excellent throughout the work, well-chosen and demonstrating clearly the points they are required to elucidate or emphasize.

The editors and contributors are to be congratulated on the results of their work which testifies fully to the whole-hearted manner in which they took it up, sacrificing perhaps in many cases their own pet views and theories in order to give the reader the unbiased, broad-minded view of the subject which they have throughout aimed at and in the end so successfully attained.

Applied Pathology in Diagnosis and Treatment—By JULIAS M. BERNSTEIN. Published for the University of London Press by Hodder and Stoughton and Henry Frowde. Price 10/6 net.

AFTER an introduction the Author devotes five chapters to the subject of the blood, the next chapter deals with serology, after this there are four chapters on bacteriotherapy and serum therapy and one chapter deals with the complement fixation method of diagnosis and one with cytology, he then passes on to the subject of the urine which he discusses in five chapters. The next chapters are concerned with infective conditions of the urethra, disorders of digestion, the faeces, bacteriology of the mouth, the sputum, pleural effusion, and infective conditions of the skin. One chapter gives an account of modern means of diagnosing certain infective diseases which belong essentially to the province of the clinical pathologist, *viz.*, Glanders, Syphilis, Tuberculosis, Actinomycosis and Leprosy. There is one chapter on Tuberculin and one on Chemootherapy. The book is well illustrated with a number of coloured plates and figures.

In dealing with Leucopenia the Author omits to mention Kala Azar. His explanation of the colour index is not very clear and the example which he gives on page 42 would work out at 0.5 not 0.6 as stated. On page 71 in discussing precipitins he omits to mention the very important practical detail that the tubes should be viewed against a sloping black background. In regard to the opsonic index he states, "but now, though fully recognising its importance, we can lay it aside on the shelf of medical history, while we advance in the art of bacteriotherapy." The important subject of the diagnosis of Leprosy is very briefly dealt with.

The book should prove useful to practitioners requiring a short account of this important subject.

Bacteriological Technique—By J. W. H. EYRE. Second Edition. Published by W. B. Saunders. Price 10/10.

IN bacteriology an accurate knowledge of technique is of extreme importance, the discovery of reliable and practical methods has been the chief factor in the advance of this science. The present volume is the second edition of the well-known Laboratory book. It has been rewritten and enlarged. The volume will be found a most useful addition to the Library of a bacteriological laboratory as a book of reference on methods, etc., and can be confidently recommended.

Manual of Operative Surgery.—By D. C. L. FITZ WILLIAMS, Ch.M., F.R.C.S., Baillière, Tindall & Cox. Demy 8 vo, 450 pp., 284 figures in the text. Price, 10s 6d nett.

THE book is written for the instruction of the apprentice and to help the journeyman, craftsman of the profession. These objects are practically incompatible, and it is no fault of the author that while succeeding in the former he has failed to achieve the latter end.

It is divided into thirteen chapters, and the first 224 pages are devoted to the operative surgery of arteries, nerves, and bones including amputation. Its utility we think would have been enhanced by some greater compression of the material on these subjects, and the amplification of the surgery of the genito-urinary tract for instance: ovariotomy is dismissed in one page and hysterectomy in four pages.

The preliminary general directions lack directness, and the preparation of the skin and hands is vague and incomplete. Turning to what we may term "tropical surgery" we confess to a feeling of disappointment. The operations of transfusion, of excision of the sac for hydrocoel and amputation of scrotal tumours are not alluded to. The operation treatment of hepatic abscess is dealt with in half a page, partial re-section of a rib, and suturing this the serous membranes are advocated,—both errors in our opinion. Suturing the bladder and drainage of the provesical space again is not either ideal or even sound in practice.

Four methods of radical cure of inguinal hernia are given, but in the commentary nothing is said on the subject of combining the merits of these different methods, which often differ only in comparative unessentials.

We have said enough to show that the book will be of more use to the student than the practitioner, and though we have found fault in detail, there is no doubt that it will prove a useful handbook for reference though not perhaps as useful as it might easily be made to the practitioner in India. The print is good, the illustrations are excellent, and there is a fair index.

ANNUAL REPORT

THE BOMBAY BACTERIOLOGICAL REPORT

THIS report is so full of valuable papers on many subjects that it is impossible to adequately review them in the space at our disposal. We propose therefore to make the following extracts. The report is issued by Major Glen Liston, C.I.E., M.D., I.M.S., the Director —

IMMUNITY OF CERTAIN TRACTS FROM PLAGUE

Captains Kunhardt and Taylor were responsible for the work in Madras while Captains Gloster and White undertook the observations in the United Provinces. As might have been expected, no single altogether satisfactory explanation for the comparative freedom from plague of the Madras Presidency and certain parts of the United Provinces was discovered. In the case of Madras City for example it was found that the conditions of house construction were not unfavourable to the establishment of epidemic plague and that suitable climatic conditions for the spread of plague do prevail for a short period during the winter months. Though neither rats nor rat fleas are so plentiful as in other places which have been examined, still there are probably enough of both to maintain plague if it were introduced. Moreover, the local *Mus rattus* has been shown by experiment to be exceptionally susceptible to plague infection. It appears therefore that Madras city is not immune to the disease in the sense that the prevailing conditions are such that plague could not become established in it. Experience has demonstrated that a plague epidemic is more likely to be started if the infection reaches the place at the time when meteorological conditions are favourable and when rat fleas are most numerous. In Madras these conditions are most suitable from December to February, that is at a time when the plague season is established in such towns as Bangalore from which the disease could easily be brought by rail. It is probable that Madras has escaped the ravages of plague because infection has not been able to reach it at the most appropriate time or because the infection has encountered some obstacle on its arrival. The infection of plague is known to travel long distances in the bodies of rat fleas which have sucked the blood of plague infected animals. These fleas are transported from one place to another, either among the kit of persons coming from infected places or among grain which has been soiled by rats. Meteorological conditions largely affect the duration of the life of the rat flea when separated in this way from its natural host, a cool atmosphere permitting the insect to live ten times as long as in a hot and dry air. Madras, on the whole, is a hot place, but in the cooler months the temperature would seemingly allow fleas to live apart from their host for some time, though there is no definitely cold weather to give really favourable conditions for the prolonged existence of rat fleas away from their host. Further, in Madras there is a comparatively small trade in wheat. In India large centres of the wheat trade in particular have suffered severely from plague. In Madras there is, however, a considerable trade in rice. It may be that infection is more readily conveyed in wheat than in rice. A map shewing the distribution of plague in India very closely resembles one illustrating the distribution of wheat cultivation. It might be argued either that the trade in wheat is to some extent responsible for the spread of plague or what seems more probable that the climatic conditions favourable for the growth of wheat are suitable for the propagation of the plague. A very important and interesting fact, however, was revealed during the investigations in the United Provinces, namely, that in

Banda, a town situated in the Bundelkhand division of the United Provinces, a division of these provinces which has suffered very lightly from plague, the average number of fleas found upon rats for many months in the year was larger than the number found on rats in any other part of India in which the Commissioner has worked. In spite of this fact, and, enjoying as it does a climate which so far as our experience goes is eminently suitable to plague, harbouring in the houses a very large rat population as susceptible to plague as Madras rats are, Banda town has entirely escaped plague though the disease occurs year after year with considerable virulence in the comparatively adjacent town of Cawnpore which is distant from Banda, in a direct line, only some seventy miles. Here it must be confessed we were faced with a problem of great importance which if it could be solved might throw much light on the manner in which plague is spread. Every effort has been made to solve this problem, but the only facts which seem to throw any light on it are —

(1) Very little grain is imported into Banda while considerable quantities are exported from the place. This grain is collected from the surrounding districts and is often stored in pits where rats and even insects cannot survive owing to the development of carbon dioxide gas which accumulates in the pits. The gas is produced by the living grain which consumes oxygen and gives off carbon dioxide gas.

(2) The people of the Bundelkhand are to some extent distinct from the people inhabiting other parts of the United Provinces, their family connections and ancient history are more closely associated with the peoples of Central India where epidemics of plague only occasionally occur than with the people living in the badly plague infected Ganges Valley. Nevertheless, Banda is situated on a railway line which connects it with the plague infected districts of Cawnpore and Allahabad through the railway junctions of Jhansi and Mainpuri, and many of the merchants in Banda pay frequent visits to both these towns, especially the former, for the purpose of transacting business. We learned also that during a severe outbreak of plague in Mirzapur, a district to the south of Banda, many refugees found shelter in Banda.

Enough has been said to shew how difficult it is to explain why certain places have escaped the ravages of plague while others have suffered severely from the disease, and although our findings have not as yet shed much light on the matter, the importance of obtaining a solution cannot be denied. The facts so far collected indicate that the places which have escaped plague infection during the seventeen years this disease has been present in India owe their freedom from infection, not because the prevailing conditions are such that plague could not become established in them, but rather to a combination of circumstances which are unfavourable for the importation of infection into them. These circumstances may be either (1) a very small import trade in grain, (2) remoteness from important trade centres, or (3) climatic conditions which are unsuited for the prolonged existence of the rat flea when separated from the natural host.

Of the three conditions just mentioned which assist in making a place less vulnerable to plague, it is well to note that only one of them can be reasonably kept under human control, namely, the import trade in grain. The investigations of the Commission in the United Provinces have shewn that the grain trade may be largely responsible for the spread of plague in India, it is important therefore that some action should be taken to regulate this trade so that it will no longer be a source of danger to the community.

Captain White, I.M.S., from a study he has made of the trade returns of the United Provinces strongly supports the view that towns intimately associated with the collection and distribution of grain run not only great risk of becoming infected with plague but when infected are important centres from which infection is

disseminated to distant places by means of trade. His observations, in fact, have brought into prominence the urgent necessity for taking measures to protect grain from contact with infected rats. This is a line of action which up to the present has been little followed by the authorities who are responsible for the prevention of the spread of plague. The proper storage of grain so that it does not become infested with rats is a measure which should be the more easily carried out because it is well known that rats consume and destroy considerable quantities of grain, the cost of excluding these animals from grain stores for this reason would to some extent be met by a decrease in the loss of grain during storage. But the greatest advantage which would accrue from the enforcement of this measure would be the lessened opportunity for the transport of plague infection.

The type of building in which large quantities of grain is generally stored in India demands attention. The majority of the owners of those buildings are wealthy men who can well afford to keep their godowns in better repair. The presence of ramshackle rat-ridden grain godowns in almost all the towns and large villages in India, situated often in the midst of the most densely populated parts of these towns and in the neighbourhood of which large weekly markets are held, attracting buyers from the surrounding towns and villages, is a serious menace to the public health. The presence of such buildings in the most populous parts of towns should be regarded as a public nuisance.

DIARRHEA IN POONA

We quote the following —

An investigation into the cause or causes of diarrhoea during the rainy season in Poona was carried out by Captain J. Morrison, M.B., M.S. He began work in Poona in the middle of April 1912 and established there a small branch Laboratory which was housed in a building attached to the Infectious Diseases Hospital. Among the European officials and their families diarrhoea was said to have been less prevalent during the rainy season of 1912 than in previous years, but the impressions of those who had resided in Poona for several seasons were the only evidence that this was so. At the Station Hospital and at the Central Jail the admissions for diarrhoea and dysentery during June, July and August 1912 were forty per cent. more numerous than in 1911, and one hundred per cent greater than those recorded for the year 1910 as the following figures shew —

Admissions for Diarrhoea and Dysentery during June, July and August 1912

	1910	1911	1912
Station Hospital	23	45	62
Central Jail	77	97	144
TOTAL	100	142	206

During the period of observation the most complete figures, to shew the incidence of the disease among a known body of men, were obtained from the sick room of the Loyal North Lancashire Regiment. These figures shew that during May there was very little diarrhoea, only eleven cases were reported in

On the whole the prevalence of diarrhoea and dysentery follows to increase in the humidity of the atmosphere which is associated with the monsoon rainfall, a point which has generally been recognised in previous years.

Now with the advent of the monsoon flies become a pest in Poona and to ascertain what relation the number of these insects have to the prevalence of diarrhoea and dysentery, an attempt was made to gauge the number found in the houses each day by placing fly papers in thirty selected places scattered over the cantonment and European residential quarter. Captain Morrison hoped by this means to show whence the flies came and their relation to cases of diarrhoea. Many difficulties however were encountered in collecting the flies by fly papers.

The cleanliness of the immediate surroundings varied from time to time and the fly papers were sometimes tampered with, additional fly papers were sometimes placed in contiguity with those used for the test. Under such conditions successive counts at the same station varied to an extraordinary degree but the accidental nature of these irregularities were shown by a series of figures obtained at two additional stations where the conditions from day to day were more under control. At one of these stations it was observed that a slight alteration of meals to accommodate a guest who remained for three days increased the fly catch from 234 to 500, 462, 466, after his departure the numbers fell on successive days to 296, 300, 290 and 250.

A study of the fly counts collected in the manner described above showed that early in June, the number of flies increased and was practically continuous till the last week in August when the number reached a maximum and then, with extraordinary rapidity, the flies disappeared until after another ten days there were no more flies than had been found in May. The first increase in the number of flies and in the number of cases of diarrhoea occurred in the first week in June.

BEAUCHAMP-WILLIAMS' VACCINE FOR LEPROSY.

It will be seen from some of the reports that the therapeutic value of Williams' vaccine appears to be doubtful, while according to others the vaccine has a specific action in the disease, viz., dispersion of lepromata, reduction of nerve swellings, and diminution of anaesthetic areas. Our own experience derived from cases treated at the Acworth Leper Asylum and also at the Laboratory has shown us that it is not possible to continue the administration in large doses without producing severe reactionary symptoms and we can only conclude that where it has been possible to repeatedly inject large doses without reaction, the vaccine must have deteriorated and we suggest this to be the reason why it proved to be so inert in experiments carried out in New South Wales and in the Transvaal.

As regards the experiments conducted in the Bilaspur District every patient appears to have received only one cubic centimeter as a dose on every occasion as a routine measure with the exception of case No 1, who was under Captain Rutherford's personal observation. This was the only case which received gradually increasing doses and was the only patient in whom all the symptoms remained unaltered. The treatment in this case was kept up for 100 days only.

Our own experience with the vaccine on the whole has been satisfactory although marked and speedy improvement in every case has by no means occurred. Improvement in some cases, though gradual, is very definite. Our result will be published after further experience. The disease progresses so slowly that a trustworthy result cannot be expected till cases have been under observation for some years.

It may be well to repeat the instructions for the use of the vaccine, for, those who have used it, have not always realised the object of the treatment. The initial dose is 0.5 c.c., the injections should be repeated every week or ten days. As the vaccine sometime produces a severe reaction, the doses should be cautiously increased. The amount of reaction produced usually varies a good deal, it may be slight, causing some heat and itchiness in the nodules, and at other times acute inflammation with swelling of nodules accompanied by high fever may result. The maximum dose is 5 c.c. and

this dose should be used with caution. The treatment must be carried on for a long period, the object of using the vaccine is to immunise the patient and prevent if possible further extension of the disease.

GUINEA-WORM DISEASE

Dr. Turkhud continued his investigations into the etiology of guinea-worm disease. It will not be out of place here to give a brief account of this disease which is very prevalent in certain districts of the Bombay Presidency as well as in other parts of India. In some places the disease is so common and its effects so incapacitating that agricultural operations are at times seriously interfered with owing to the scarcity of labour.

The disease is caused by the guinea-worm, *Filaria medinensis*. The worm, as a rule, produces few symptoms except perhaps urticaria, popularly known as nettle rash, until a little vesicle or blister appears on the skin situated generally near the ankles although other parts of the body may be selected. The female worm which is three or more feet long, can sometimes be felt as a thin cord beneath the skin before the vesicle is noticed. When the blister bursts turbid blood-stained fluid exudes and an ulcer is formed in the centre of which lies the anterior extremity of the worm. After a time the worm ejects from its body a milky fluid which, on examination, is found to contain myriads of minute embryos which swim about actively in water. After the worm has ejected all her young, severe inflammation and suppuration is liable to supervene in the affected part, for the worm must be removed from the body. Some weeks and even months elapse before the worm has been completely extruded but as soon as this is effected the ulcers and abscesses heal and the inflammation subsides.

The mature female guinea worm which is the cause of the disease is practically a long slender bag containing an enormous number of young worms. These young worms must find their way to water, else they speedily perish, even in water they soon die, unless there is present in the water a small crustacean of the genus cyclops. These cyclops are minute semi-transparent creatures only just visible to the naked eye and in size are a little smaller than the head of a pin. The young guinea-worms are taken up by the cyclops in the manner presently to be described, and ultimately find their way to the body cavity of the cyclops where they pass through certain stages of development and are then able to live in the cyclops so long as the cyclops survives or until the cyclops is swallowed by man.

There exists some difference of opinion as to how the young guinea worms effect an entrance to the body of the cyclops.

Fedschenko who, working in Central Asia in 1870, was the first to discover the development of the guinea-worm in the cyclops, believed that the young worms sought out and penetrated the integument of the cyclops. Later Manson and Blanchard confirmed Fedschenko's observation and Wenyon in the Soudan, as late as 1905, thought that the embryos enter the cyclops, tail first, penetrating the cuticle of the cyclops by means of their sharp tails. Leiper, however, from his experience in West Africa, maintained that the embryos enter the cyclops, not through the integument, but by way of the intestine. The observations we have made at Parel have satisfied us that the embryos do not seek out the cyclops but are sought after by the cyclops which swallow them as food. This can be very easily demonstrated if some cyclops are starved by placing them for a few hours in tap water before adding guinea-worm embryos to it. Under these circumstances the cyclops can be seen to capture and swallow the young worms with avidity. By the aid of a microscope the worms may be seen at first coiled up within the stomach of the cyclops. The stomach rhythmically contracts as if endeavouring to pass the worms on into the intestine. Suddenly however the worm can be seen to escape into the body cavity of the cyclops apparently through a rupture in the stomach

wall of the cyclops. When many guinea worm embryos have been swallowed by a single cyclops the rupture of the stomach is often followed by the death of the cyclops, but when only one or two worms have been ingested, the rupture of the stomach does not seem to cause great inconvenience to the cyclops. Once within the body cavity of the cyclops the young worm goes through certain developmental changes shedding its original skin about the seventh day. Cyclops containing living guinea-worms have been kept in the Laboratory for as long as 53 days. So much then for the manner in which the guinea worm finds its way into the body of the cyclops. We have next to consider how the worm gains an entrance to the human body.

It had been suggested by Manson, and further evidence in support of this theory had been brought forward by Leiper in 1907, that the cyclops containing young worms are swallowed in drinking water by man. In the human stomach the cyclops are killed by the gastric juice but this juice activates the young worm within the cyclops and causes it ultimately to break through the partly digested integument of the cyclops. Having escaped from the body of the cyclops, the worm which at this stage is microscopically minute and only measures about one-fiftieth part of an inch in length, bores its way through the wall of the human stomach. In the course of from eight to twelve months the female worm, for little is known of the male worm, increases enormously in size and now measures nearly 30 inches in length. During this period the worm has wandered from the region of the stomach to other parts of the body, at last, however, it finds its way to the legs where we saw that it produced a blister and was then sufficiently developed to give forth young worms.

It is clear, therefore, that to maintain its existence the worm has to pass from man into a cyclops, and it has to go through a stage of development in that crustacean which may vary in length from one to eight or more weeks. The worm has then to pass from the cyclops into man. In the human body from eight to twelve months are required to complete its development. Modern authorities believe that it is in this manner that the worm finds its way into man, but up to the present actual proof that this is the method of infection is not forthcoming, unless it be held that the experiment with a single monkey which Leiper fed on infected cyclops and in which three immature female and two male worms were found six months later, is regarded as sufficient evidence.

If the theory which I have outlined above as to the manner in which this disease is spread, is correct, and we hope shortly to prove its truth, it is very unsatisfactory to think that the great suffering which this disease entails, lasting in each case on an average for four months and occasionally ending in permanent deformity and crippling for life, is due to ignorance and could be prevented by so simple an expedient as the straining of the drinking water through a piece of cloth. In attempting to eradicate this disease, and this is also true of many other diseases in India, the great difficulties to be overcome are the ignorance and prejudices of the people.

Correspondence

CHOLERA AND "EPIDEMIC DOCTORS"

To the Editor of the "THE INDIAN MEDICAL GAZETTE"

SIR.—A somewhat significant letter entitled "Cholera in Sylhet" appeared in a recent issue of the *Bengali* over the signature "A native of Sylhet".

The writer decries the present system of dealing with village cholera outbreaks and asks "What good will the travelling doctors do and how they will check the epidemic?" From "conversations with many medical authorities" he learns that the only effective treatment of cholera is "by injection of water and salt into veins," but this is "too

difficult to be performed by the travelling doctors in the poor houses of the villagers" Moreover the people are afraid of this treatment and cannot be induced to undergo it because "it is done by an operation and by injection of needles."

As regards treating the victims of these village epidemics, therefore, the saline injection treatment being impracticable, and other remedies being, he implies, valueless, there is nothing, it seems, which the epidemic doctors can do to save life.

As regards stopping the spread of cholera, they are, it appears, no more effective. He learns that "the cholera epidemic can only be checked by the provision of pure water and by preventing the people from drinking the infected water and having communication with the sick persons." But, he continues, "the doctors cannot provide pure water supply, nor prevent the ignorant people from drinking poisonous water. They can also not prevent the sick persons from defiling the water or having communication with healthy persons."

He therefore asks "Why do the authorities send the travelling doctors and medicines to villages infected with cholera?"

If the writer is correct in his premises, he would certainly seem to be entitled to ask this question. Let us briefly examine his proposition.

(I) What is the system of which he complains? In my district, and others of Assam and Eastern Bengal with which I am acquainted, it consists in the appointment by the Local or District Boards of epidemic doctors who are supplied with a few medicines and disinfectants, and occasionally a saline infusion outfit. Each man is given either a boat and boatman or a coolie to carry his equipment, and is then sent to the infected villages to do the best he can towards treating the patients and persuading the people to adopt some simple sanitary precautions. He, of course, has no authority to enforce any measures. One man usually has to visit several infected villages in a day, and perhaps to cover a whole thana or sub division, travelling many miles daily from village to village.

These epidemic doctors are sometimes permanently retained by the Boards, but more often they are temporarily engaged when an epidemic breaks out. They are usually men with a Sub Assistant Surgeon's qualification of some sort but, especially the temporary men, are by no means the best of their class. Often they are only compounders, and not rarely they have no recognised qualification at all.

(II) Is there any form of treatment which these travelling doctors can usefully administer to cholera patients under such conditions?

As regards the saline infusion treatment, we know that in a well equipped hospital it is extremely valuable, and capable of something like halving the case mortality. But, under the present conditions of village epidemics, I fancy its usefulness is pretty correctly estimated by the writer of the above letter as nil. The really effective intravenous method is practically impossible for one man to apply unaided, however skilled he may be. The usual type of epidemic doctor has neither the knowledge nor the ability to use the treatment even in its simpler and less effective forms. Nor has he the courage or influence to push it in the face of opposition.

Moreover, if he attempted to use it regularly, his time and attention would be entirely occupied for several days by one or two households, instead of the many villages and even parganas over which he now extends his operations in the course of a week. Even under vastly improved circumstances the number of cases receiving it would be too few to appreciably affect the mortality of an epidemic as a whole.

As regards medicines in the treatment of cholera, we certainly know of none which can be called a cure. Nor, so far as I know, is there any which, given by itself as a specific, has been definitely proved to lower the case mortality. But we undoubtedly have some which, given with skill and discrimination at the right time and in the right way, can alleviate a few of the symptoms, help to tide over some of the dangerous complications and occasionally even save life. But these, to be efficaciously applied, need constant observation of the patient and careful watching for every change in his symptoms. They are largely dependent, too, on good nursing. In fact they require the best hospital conditions. I doubt if there is any treatment which can be of any use whatever it left to the patient or his relatives to administer. Nor do I believe that a doctor can do anything at all for his patient by one or two hurried visits and the prescription of a few drugs to be given by the relatives. This is the best that an epidemic doctor can do. Not rarely he has to be content with leaving some pills or a mixture with the headman of a village to be distributed among sick whom he has never seen.

Apart from the saline injection treatment I think it is generally recognised that even under hospital conditions, with all the drugs in or out of the pharmacopoeia and all the care of skilled nurses, the case mortality of cholera cannot

be reduced by more than a very small percentage. Under the conditions of village epidemics I do not believe that one case in a thousand or even one in a hundred thousand is saved by the medicines of the travelling doctors.

(III) Can these epidemic doctors do anything in the way of preventing cholera or checking its spread?

Whatever may be said of our helplessness in curing cholera, under such conditions it cannot be denied that we know a great deal about its causes and prevention. By the proper application of certain sanitary principles we can render the occurrence of epidemics practically impossible. We can also, given the necessary powers and materials, wipe out an outbreak of cholera with mathematical certainty even in the absence of ideal sanitation. In an Indian jail or among troops in an Indian cantonment an outbreak which is not immediately and successfully nipped in the bud is unheard of.

The means by which this is done may be summarised thus —

(1) Powers of complete control over the sick and their households, including if necessary the removal and isolation of patients and disinfection or destruction of infected articles.

(2) Powers to prevent the access of the healthy to infected houses or areas and polluted water supplies.

(3) The provision of pure or disinfected water for the community.

The primary aim of all these measures is to prevent the consumption by the healthy of food and water contaminated by the sick.

Now the epidemic doctor is sent out without powers to apply a single one of these well known preventive measures. He sees the public water supply being directly infected by the discharges of the cholera patients, and even by their corpses. Before his very eyes the same water is drunk by the healthy, and free communication goes on between infected and non infected households. Is there anything which he can do to prevent these things? Yes, certainly! He can talk to the villagers, tell them not to defile the water, tell them to burn the bedding, corpses and excreta of the sick, forbid the healthy to visit the houses of the sick, and direct everyone to boil their drinking water! We all know how they will hasten to obey his orders, and how quickly the epidemic will subside under the application of these few simple measures which are so easily understood and readily carried out by the intelligent villagers!

I know from experience that the meaning of even the simplest of these instructions, namely, to boil the water, is seldom and with difficulty understood and still more rarely acted on. While it is possible that among the more intelligent, especially those with some education, an individual here and there, and even a household, may be saved from infection by listening to instructions and boiling their drinking water, I cannot believe that the length of an epidemic will be shortened by a single day or a single village saved from invasion by mere preaching and the exhibition of drugs.

But cannot something be done by disinfecting water supplies? Unfortunately it cannot under the conditions which prevail in Assam and Eastern Bengal. The village water supply is usually the nearest river or "khal". In many parts it is the fresh water sea ("baor") surrounding the island on which each house or group of houses is built. Sometimes it is a tank and rarely a well. The shores of these rivers, seas, and sometimes tanks, are also the public latrines and washing places. It may be possible to disinfect a well, but rivers, seas and tanks are out of the question.

What answer then can be given to the above query "Why do the authorities send the travelling doctors, &c?" The best that I can give is this —

Because (1) while it is recognised that little or nothing can be done for the sick without getting them into a hospital, it is hoped that, if the epidemic doctors talk loud enough and long enough, the people may in time begin to understand some of the means by which cholera can be prevented. I fear this hope is a faint one.

(2) Any more practical and effective measures would be extremely unpopular and could not be applied without coercion.

But there are at least two grave objections to the present system which are not mentioned by "A native of Sylhet". One is the trust with which the people take the medicines of the epidemic doctors, both as preventives and cures. This trust, in itself a good thing, unfortunately diverts their attention from the only measures which can be of any use. It is also a temptation to the doctors to be content with administering pills and mixtures, which are so readily received, and to neglect the essential but much more difficult part of their duty, namely, preaching to unheeding hearers.

The second grave objection is the degrading influence on the doctors of sending them out to fight cholera unarmed with any effective weapon, but encouraged to put up the best sham fight they can with talk and a lot of useless drugs.

The best of them, I have reason to think, realise their position and feel it acutely. Partly for this reason few self respecting men will accept employment on cholera duty. The worst of them are already quacks and are content to draw their pay and practise methods which they understand, while there is an intermediate class who are in danger of consciously or unconsciously forming the habit of such practices when they find out the sort of work which is expected of them. Cholera duty is thus a particularly unfortunate introduction to medical practice for young men who have just left the medical schools.

For these two reasons it would, in my opinion, be far better to send out the doctors without any medicines at all, and to acknowledge that they go simply as preachers. So long as the "Sarkar" sends medicines, the people will continue to take them and believe in them, and will regard the advice and instructions as so much unnecessary padding. Not only are the people so deluded, but also a great many of the epidemic doctors themselves.

"A native of Sylhet" concludes his letter as follows — "It is high time the authorities would take good advice from the highest medical authorities. Practical steps are urgently required to be devised for saving the lives of the thousands of poor sufferers who, etc."

There is no difficulty in devising the practical steps. They are to be seen working in any jail or cantonment on the occurrence of a case of cholera. They are thoroughly effective, but they have nothing whatever to do with medicines or preaching. Unfortunately they would certainly be very unpopular in a village or even in a municipality, and would require police as well as doctors to carry them out. Nevertheless they have been successfully applied in European countries. The "authorities" in India would introduce them quickly enough if they thought that the public would willingly submit to them. But as things are the public would consider the cure worse than the disease, and would far prefer to take their chance of getting cholera. The authorities, unwilling to interfere with their liberty, acknowledge their right to do so if they like.

It is a significant and healthy sign that "a native of Sylhet" should have formed such sound opinions, and had the courage to publish them in the press. It rests with him and his influential countrymen to cultivate public opinion along these lines. As soon as there is an indication that it is ripe for the introduction of "practical steps" I have little doubt that the authorities will take action. Even if a considerable minority desired protection from the folly of the majority, they would have a right to claim it.

SYLHET, } L BODLEY SCOTT, B.A., M.D., D.P.H.,
October 1913 } CAPTAIN I.M.S.

THE CATARACT IN CAPSULE OPERATION

To the Editor of "THE INDIAN MEDICAL GAZETTE"

SIR,—I did not answer Capt F. S. Smith's reply to my article on Cataract because it was obvious that he had never done my operation.

I reply now, as it has appeared that my silence has been misconstrued.

In the first place let me assure Capt Smith that my figures are strictly accurate. I have now done over 800 cataracts by my method, and over 1,200 cataracts altogether (including the 800) since October 1911.

This number is large enough to give me confidence both in my conclusions and in my ability to reply to his criticisms.

Capt F. S. Smith and others would have us believe that there is only one correct way to extract a senile cataract.

It is but fair to ask, has the last word been said on cataract or any other subject?

As the result of personal experience, and the observation of cases operated on by Col Smith and others following his method, I am of opinion that Lt Col Smith's operation is not a sound one.

My objections to Lt Col Smith's operation are —

1. The iridectomy

I maintain that no cataract operation is sound which necessitates the permanent enlargement of the pupil.

I have questioned a large number of patients who have been operated on by Col Smith's methods, they one and all say that although they can see well in doors, they cannot see in the glare out of doors.

The complaint is intense whiteness and absence of all detail.

Nature provided a pupil for a very good reason, and its integrity is absolutely essential for perfect vision.

Only yesterday at mid day in the Binda Bazaar I met a man on whom I had operated a month ago, there was also a man present operated on by Col Smith's method. I took them both into the sun. My patient could see three kites soaring a long way off over head, in a blue white very bright

sky, because he had normal pupils and the glare did not affect him.

The other patient was dazed by the light and could not even see a goat 100 yards away, and yet in doors with his back to the light his vision was good.

2. The pressure and frequent escape of vitreous

The pressure required to dislocate and deliver the lens is far greater than is safe except in a certain limited number of cases, hence a high vitreous loss. By my method I have now done 158 cataracts consecutively without once losing vitreous.

There are some surgeons who would have us believe that no harm results from a small loss of vitreous. This has not been my experience. I find that apparently the rupture in the hyaloid soon closes, the vitreous swells producing increased tension with bulging of the scar and weak union. If a central iridectomy has not been done, the iris is frequently forced out on the 2nd or 3rd day.

I am also convinced that much pressure and manipulation during delivery causes swelling of the vitreous on the 2nd or 3rd day and so greatly jeopardises the union of the flaps, and may cause permanent bulging and astigmatism.

3. The incision

Col Smith's incision is suited to expression of the lens, but except for this I consider it unsound because —

"The wound does not unite for $\frac{1}{2}$ to 1 hour and thus fluid from the conjunctival sac can pass in and out of the anterior chamber. On the other hand a conjunctival flap seals the wound in 10 minutes."

β The sharp horny edge of the cornea frequently tears the capsule as the lens emerges.

γ A central iridectomy is necessary, otherwise there is great risk of the iris prolapsing or being caught in the scar.

δ A certain degree of astigmatism frequently follows from contraction and giving of the corneal scar. Two weeks ago I tested a retired subdt of police for glasses, he had been operated on by Lt-Col Smith himself. He required +2 Cylinder Horizontal +14 Spherical to read large print. He demonstrated the iridectomy point I have brought forward, for as he walked into my house at about 3 P.M. I thought that he was quite blind and it took him 10 minutes to recover from the glare.

4. Lieut Col Smith's Corneal incision certainly helps expression, I think because the shelf of cornea left above fixes the upper pole of the lens and supports the vitreous. At any rate it is true that expression is extremely difficult when a sclero corneal incision is employed. Flat cataracts, and cataracts in people under 30 and infants cataracts are almost impossible to express by Col Smith's method. As the suspensory ligament is very strong in such cases All these cataracts can be easily extracted in their capsules by my method.

5. The methods I put forward for operating on cataract is as follows —

1. A stitch is passed through the skin of the eyelids, and left untied. At the end of the operation the stitch is tied. This prevents the upper eyelid from turning back the large corneal flap.

2. An incision which divides half the cornea so as to offer no obstruction whatsoever to the passage of the lens.

The incision passes through the hazy line where the cornea passes into the sclerotic.

3. A small conjunctival flap at the top of the incision which rarely causes bleeding.

4. The dislocation of the lens by means of a special silver wire hook which is passed down to tear the lower segment of the suspensory ligament.

5. A basal iridectomy, or what Capt Smith calls a button hole.

The advantages I find are —

(i) Greatly decreased number of vitreous escapes. I have now done 148 consecutive cases without an escape of vitreous.

(ii) A great decrease in the number of torn capsules. I don't burst the capsule now once in fifty cases.

(iii) An active pupil with very little risk of iris prolapse or adhesion to the scar.

Capt Smith suggests that I copied my method from some continental dislocator. I know nothing about the man.

My idea of tearing the suspensory ligament and so setting free the encapsulated lens was the outcome of simple reasoning and reference to anatomy, it was absolutely original and worked out when civil surgeon of Kamrup, Assam, in 1908.

Lt-Colonel Smith had conclusively proved that the only correct way of extracting a cataract is in its capsule. I found his operation extremely difficult to perform, worked out the why and wherefore, and hence the idea of tearing the ligament.

I ask, which is the more logical and surgically sound procedure, to tear the ligament by a modified cystotome, or to

burst the ligament by pressure from without, always remem-
bering that in many cases the ligament is very strong, and in
others, the hyaloid membrane and capsule very weak."

It may appear difficult to tear the ligament but it is not
so.

Touching the iris may be thought to make the patient wince,
but he does not. Passing the instrument may be thought
to increase the risk of sepsis, but it does not. If Capt
Smith is content with the operation he employs nothing more
need be said, but that is no reason why I should be content
with the operation also, and why I should not put forward an
extremely simple and logical modification. Messrs Smith,
Stanistreet & Co, Calcutta, and Messrs John Weiss & Son,
Oxford Street, London, W Stock my speculum, and liga-
ment divider.

Yours, etc.,
V B NESFIELD,
F R C S, England,
L R C P, London,
Civil Surgeon, Banda, U P

TERAPEUTIC NOTICES

LABORATORY experiments and clinical experience together demonstrate that the prophylactic use of tetanus antitoxin is a measure of undoubted value, and one which should be employed in all cases of probable infection with the *bacillus tetani*. The results of the treatment of "Fourth of July, wounds in America, for instance, almost warrant a definite statement that tetanus will not develop from an infected wound in a patient who received very shortly after infection an adequate dose of antitoxin. In the treatment of tetanus also, anti tetanus serum has been found useful. Messrs Burroughs, Wellcome & Co have issued two preparations of tetanus antitoxin, for use in human and veterinary practice, respectively. They are "Wellcome" Bland Tetanus Antitoxic Serum, issued in hermetically sealed phials of 10 c c containing 1,500 antitoxin units, and Tetanus Antitoxic Serum, Veterinary, issued in hermetically sealed phials of 10 c c containing 1,000 units. These products are obtained by immunising horses with tetanus toxin, and differ only in the number of units per c c which they contain. The unit adopted is that fixed by the Hygienic Department of Washington.

"TABLOID" ADJUSTABLE HEAD DRESSING (LARGE SIZE)

As a means of fixing dressings on the head, the "Tabloid" Adjustable Head Dressing, originated and introduced by Burroughs, Wellcome & Co, makes the roller bandage an anachronism. This dressing, which is now issued in a large size, has been devised for use as a covering in circumstances where the primary dressings are of considerable size. It consists of a cap, split at one side to render it adjustable, and having a back piece covering the nape of the neck. To the cap a bandage is attached, while the back piece carries tapes. A pad of double cyanide gauze and a safety pin are enclosed with the head dressing for use in first aid cases.

The large size "Tabloid" Adjustable Head Dressing is applied simply by slipping the cap over the head, and passing the bandage portion round the back of the head, across the forehead, and back again to the starting point, where it is fixed with a safety pin. The tapes attached to the back piece are tied under the chin, so allowing the bulky dressings to be covered in and secured.

We have received specimens of ARSEN TRIFERRIN, and some literature showing its value in nervous exhaustion and debility. It is made up in tablets and is said to be especially useful for children.

Messrs Bovril, Limited, have been awarded the Grand Prix at the Ghent Exhibition, and also a Diploma for excellence at the Congo Belge Exhibition, Elisabethville. This double distinction, which heads a long list of previous awards, is certainly a high tribute to the excellence of the world famous beef beverage.

SERVICE NOTES

PARAGRAPH 10 of the regulations regarding the grant of study leave to officers of the Indian Medical Service, as published in Army Department Notification No 867, dated the 6th September 1912, is reconstructed as follows —

For the course of study, lodging allowance at the rate of 8s. a day for a field officer, 6s. for a Captain, and 4s. for a Lieutenant, will be granted on the production of the certificates required by Rule 12. It is to be understood that,

in order to qualify for the grant of Study Leave or for the receipt of lodging allowance, a definite course of study at a recognised institution, which will occupy the time of the officer for five or six days a week, must be pursued. Lodging allowance will be admissible up to 14 days for any period of vacation. A period during which an officer interrupts his course for his own convenience cannot be considered as vacation.

In the case of an officer retiring from the service without returning to India after a period of study leave, the lodging allowance will be forfeited. If the officer is under Civil Leave Rules, the study leave will be converted into furlough to the extent of the furlough standing to his credit at the date of retirement. Any balance of the period of study leave mentioned above which cannot be so converted will be excluded in reckoning service for pension.

SURGEON LIEUT-COLONEL JOHN O'NEILL Bengal Medical Service, retired, died in London on 15th October 1913. He was born on 31st July 1848, educated at Queen's College, Cork, took the degrees of M D and M Ch in the long defunct Queen's University of Ireland in 1870, and entered the Navy in 1872, serving afloat for some three years. After resigning his naval commission, he entered the I M S as Surgeon on 30th September 1875, becoming Surgeon Major on 30th September 1881, and Surgeon Lt Col on 30th September 1895. He retired from 7th April 1896, while in the Navy he served in the Ashanti war in 1873-74, receiving the medal. The Army List assigns him no war service in India, where he spent most of his service in civil employ in the Punjab, in the Sanitary Department. When the great cholera epidemic broke out in Egypt in 1883, a year after the British occupation of that country, Surgeon O'Neill, as he then was, was the Senior Officer of the eight or ten Surgeons of the Bengal Medical Service deputed for special duty in that country.

SURGEON MAJOR RUSTOMJI BYROMJEE, Bombay Medical Service, retired, died at Ravenscourt Park, West London, on 3rd November 1913, aged 80. He was born on 23rd October 1833, took the M R C S and L S A, as well as the M D of St Andrews, in 1856, and entered the I M S as Assistant Surgeon on 29th January 1857, becoming Surgeon on 29th January 1869, and Surgeon-Major on 1st July 1873. He retired, as so many Indian members of the service do, on attaining the earliest pension, on 6th October 1875. He served in Arabia, in 1858, at the capture of the fort of Sheikh Othman, near Aden. Dr Byromjee was the second native of India who succeeded in gaining admission to the I M S. Under the Company, only three Indians got commissions in that service, the first was S C G Chuckerbutty, who passed first at the open competition in January 1855. The third was Rajendra Chandra Chandra, who entered on 27th January 1858. Chuckerbutty and Chandra were both posted to Bengal where both in succession held the post of Professor of Materia Medica in the Calcutta Medical College, and second Physician to the College Hospital.

ONE of the most prominent figures in the medical profession at home, Sir John Batty Tuke, died at Balgreen, Gorgie, near Edinburgh, on 13th October 1913. Born at Beverley, in Yorkshire, on 9th January 1835, he was educated at Edinburgh Academy, and at the University of that city, where he took the degree of M D in 1856. Shortly afterwards he went out to New Zealand, and there served as senior medical officer of the colonial troops in the Maori War of 1860-63. Returning to Britain, he took up the treatment of insanity, a specialty in which many of his name have become prominent. After acting for some time as an assistant at the Royal Edinburgh Asylum, he became Superintendent of the Fife and Kinross Lunatic Asylum in 1867. In 1873 he returned to Edinburgh, and took charge of the large Asylum at Saughton Hall, a little west of Edinburgh. Some of the senior members of the I M S, and many in the retired list, will remember him as holding that post. The Asylum was subsequently removed to Marisbank, near Polton, south of Edinburgh. Saughton Hall is now a public museum, and its grounds a public park. He became a Fellow of the Royal College of Physicians in 1871, was President in 1898, being knighted in that year, and represented the College on the General Medical Council for a quarter of a century, from 1867 to 1912. He was given the D Sc degree by Trinity College Dublin, in 1896, and the LL D of Edinburgh in 1902. For ten years he represented the Universities of Edinburgh and St. Andrews in the House of Commons being elected unopposed in 1900. In 1906 he defeated another Conservative candidate, Mr St Leo Strachey. In January 1910 he did not seek re-election, making room for Sir Robert Finlay, also a member, or rather an ex member, of the medical profession, who defeated Emeritus Professor Sir Alexander Simpson, who stood as a Radical. Both in 1906 and 1910 the majority was about two to one. In December 1910 Sir Robert Finlay was unopposed.

CAPTAIN ROBERT LONG GAMLEN, M.D., has been transferred by the Most Hon'ble the Secretary of State for India to the Temporary Half Pay List, subject to His Majesty's approval, with effect from the 24th November 1913. Capt Gamlen entered the service on 1st August 1908.

THE services of Captain R E Flowerdew, M.B., I.M.S., are placed temporarily at the disposal of the Government of Madras for employment in the Jail Department.

ON being relieved by Lieutenant T H Bonnar, I.S.M.D., Military Assistant Surgeon H G H Munrowd, I.S.M.D., Officiating Civil Surgeon, Garo Hills, is appointed to be Travelling Inspector of Emigrants, Assam.

ON being relieved by Major W D Ritchie, I.M.S., Lieutenant T H Bonnar, I.S.M.D., Officiating Civil Surgeon, Goalpara, is appointed to be Civil Surgeon, Garo Hills.

ON being relieved by Major E C MacLeod, I.M.S., Major W D Ritchie, I.M.S., Officiating Civil Surgeon, Darrang, is re-appointed to be Civil Surgeon, Goalpara.

ON being relieved of his duties as Officiating Inspector-General of Civil Hospitals, Inspector General of Prisons and Sanitary Commissioner, Assam, Major E C MacLeod, I.M.S., is re-appointed to be Civil Surgeon, Darrang.

MAJOR C A LANE, I.M.S., Officiating Civil Surgeon, Darjeeling, is confirmed in that appointment, with effect from the 9th November 1913, vice Major A Gwyther, I.M.S.

LIEUTENANT COLONEL H S WOOD, I.M.S., Civil Surgeon, first class, on leave, is appointed to be Civil Surgeon of Murshidabad, with effect from the 9th November 1913, vice Major O A Lane, I.M.S., transferred, Captain A S M Peebles, I.M.S., continuing to act in that appointment in addition to his own duties, as at present.

ON being relieved of his officiating appointment as Professor of Surgery, Medical College, Calcutta, and Surgeon to the College Hospital, Major E O Thistleton, I.M.S., Civil Surgeon, is posted to Burdwan, with effect from the 11th November.

CAPTAIN J J H NELSON, M.B. (Edin.), I.V.S., Captain R F STEEL, M.B. (Dub.), and Captain S H Middleton West, M.B. (Manc.), I.M.S., have passed the examination for F.R.C.S. of Edinburgh.

LIEUTENANT-COLONEL W MOLESWORTH, I.M.S., is not due out from leave for 31st March 1914.

LIEUTENANT COLONEL F C PEREIRA, I.M.S., is due out on 14th June 1914.

LIEUTENANT COLONEL R H ELLIOT, I.M.S., F.R.C.S., has extended his leave till 18th May 1914.

LIEUTENANT COLONEL R K MITTER, I.M.S., is not due out till 20th September 1914.

MAJOR O G WEBSTER, I.M.S., has got 2 years' leave and is not due out till end of July 1915.

CAPTAIN A S LESLIE, I.M.S., has been transferred to act as Assistant Superintendent, Govt Maternity Hospital, Madras, and Capt F C Fraser, I.M.S., goes to North Arcot as District Medical Officer.

CAPTAIN C L DUNN, I.M.S., Deputy Sanitary Commissioner, in charge of second range, United Provinces, is granted privilege leave, combined with special leave on urgent private affairs for a total period of six months, from the 4th November 1913.

LIEUTENANT COLONEL J G HULBERT, I.M.S., Civil Surgeon, Moradabad, is granted privilege leave, combined with special leave on urgent private affairs, for a total period of six months, from the 12th November 1913.

In exercise of the powers conferred by sub section (2), clause (a), of section 2 of the Bombay Medical Act (Bombay) of 1912, the Governor in Council is pleased to nominate Colonel R W S Lyons, M.D., I.V.S., to be President of the Bombay Medical Council vice Surgeon General H W Stevenson, C.S.I., I.M.S., resigned.

Dr. T B BUTCHER, I.S.M.D., Assistant to Civil Surgeon, Nainital, to hold civil medical charge of that district, as a temporary measure, vice Lieutenant Colonel R G Turner, I.V.S., transferred.

THE services of Captain O A R Berkeley Hill, V.B., I.M.S., are placed temporarily at the disposal of the Government of Bombay.

THE services of Major W G Richards, M.B., I.M.S., are placed temporarily at the disposal of the Government of Madras.

THE following promotions are made, subject to His Majesty's approval —

To be Colonel

Lieutenant Colonel John Cummin, V.C., C.B., C.I.E., vice Colonel C F Willis, C.B., M.D., V.H.S., retired, with effect from the 1st October 1913.

Colonel Cummin's tenure of appointment will reckon from the 27th October 1913.

Captain to be Major

Hugh Barkley Steen, M.D., 29th July 1913.

CAPTAIN J ANDERSON, I.M.S., an officiating Agency Surgeon of the second class, is posted as Civil Surgeon, Miranshah, with effect from the 6th October 1913.

CAPTAIN H CROSSLE, I.M.S., an Agency Surgeon of the second class, is granted privilege leave for two months and two days combined with special leaves for three months and twenty eight days, under Articles 233 and 316 of the Civil Service Regulations with effect from the 6th October, 1913.

Doctor D N P Ditta made over charge of the duties of Superintendent of the District Jail at Jhelum to Major J G Swan, I.M.S., on the forenoon of the 1st November 1913.

THE services of Captain O A R Berkeley-Hill, I.M.S., Officiating Superintendent of the Punjab Lunatic Asylum, are replaced at the disposal of the Government of India in the Home Department, with effect from the date on which he is relieved of his duties by Lieutenant Colonel Ewens, I.M.S., on the latter's return from leave in November.

CAPTAIN F P WERNICKE, M.B., Ch.B., I.M.S., on special duty at Pachmarhi, is posted to the Seoni District as Civil Surgeon.

MAJOR W G HAMILTON I.M.S., Acting Superintendent of the Presidency Jail, Calcutta, has recently obtained the D.P.H. diploma of Cambridge.

MAJOR F S THOMPSON, I.M.S., has obtained two years' furlough from middle of November.

MAJOR J W F RAIT, I.M.S., made over charge of the Hooghly Jail to Captain A H Proctor, I.M.S., on the afternoon of the 29th October 1913.

CAPTAIN N H HUME, I.M.S., made over charge of the Jalpaiguri Jail to Major D Munro, I.M.S., on the forenoon of the 6th November 1913.

RAI SAHIB SATIS CHANDRA BASU made over charge of the Khulna Jail to Babu Ganesh Chandra Mitra on the afternoon of the 6th November 1913.

MAJOR A C MACGILCHRIST, I.M.S., made over charge of the Rimpur Boalia Central Jail to Assistant Surgeon Upendra Nath Ray Chaudhuri on the afternoon of the 7th November 1913.

LIEUTENANT A W TRUTER, I.S.M.D., whose services have been placed at the disposal of this Government, is appointed to be Deputy Superintendent of the Rangoon Central Jail, with effect from the 1st April 1913.

MAJOR H R NUTT, I.M.S., Civil Surgeon, on return from leave, is posted to Muttra.

His Excellency the Governor of Bombay in Council is pleased to appoint Colonel R W S Lyons, V.D., I.M.S., to act as Surgeon General with the Government of Bombay, vice the Honourable Surgeon General H W Stevenson, C.S.I., I.M.S., proceeding on leave pending further orders.

LIEUTENANT COLONEL H BENNETT, M.B., C.M., F.R.C.S.E., I.M.S., Civil Surgeon, Ahmedabad, was appointed, with effect from the 28th June 1913, to act as Deputy Sanitary Commissioner, Gujarat Registration District, in addition to his own duties pending further orders.

HIS Excellency the Governor of Bombay in Council is pleased to appoint Captain A F Hamilton, M B (Lond), F R C S, I M S, to act as Deputy Sanitary Commissioner for the Central Registration District in addition to his own duties, as a temporary measure, pending further orders

CAPTAIN J TAYLOR, I M S, is appointed to hold charge of the office of Assistant Director, Bombay Bacteriological Laboratory, in addition to his own duties, during the absence on leave of Captain W D H Stevenson, I M S, or until further orders

CAPTAIN A J V BETTS, I M S, and MAJOR J L MARJORI BANKS, M D, D P H, I M S, respectively delivered over and received charge of the office of the Deputy Sanitary Commissioner, Western Registration District, on 15th October 1913, before office hours

MAJOR W V COPPINGER, I M S, Resident Physician, Medical College Hospital, Calcutta, at present on deputation to Assam is appointed to be a Civil Surgeon of the second class, with effect from the 10th October 1913 vice Lieutenant-Colonel F O'Kinealy I M S confirmed as Surgeon Superintendent, Presidency General Hospital

LIEUTENANT COLONEL P P KILKELLY, M B, B Ch (Dub), I M S, has been allowed by His Majesty's Secretary of State for India to return to duty

MAJOR W D A KEYS, M D, B S (Dub), I M S, has been allowed by His Majesty's Secretary of State for India an extension of furlough on medical certificate for two months

LIEUTENANT COLONEL S H BURNETT, M B, C M (Abdn), I M S, continued to hold charge of the Lunatic Asylum, Colaba, from the 1st to 3rd June 1913, both days inclusive

IN modification of Government Notification No 6298, dated the 27th August 1913, His Excellency the Governor in Council is pleased to appoint Major V B Bennett, M B, B S (Lond), F R C S, I M S to be a Civil Surgeon of the First Class, vice Lieut-Colonel T Jackson, M B, B Ch (R.U.I.), I M S

MAJOR T HUNTER I M S, Civil Surgeon, has been granted by His Majesty's Secretary of State for India extension of ten days' furlough

MAJOR W E McKECHNIE, I M S, Civil Surgeon, Etawah, is granted privilege leave, combined with furlough, for a total period of two years, from the date he may avail himself of it

LIEUTENANT COLONEL G T BIRDWOOD, I M S, Civil Surgeon, Lucknow, is appointed to be professor of midwifery, King George's Medical College, Lucknow in addition to his other duties, with effect from the 1st July 1913

THE Civil Assistant Surgeon attached to the Sadr dispensary, Etawah, to hold civil medical charge of that district, in addition to his own duties, vice Major W E McKechnie I M S, granted leave

THE Civil Surgeon, Mainpuri, to hold visiting medical charge of the Etawah district, vice Major W E McKechnie, I M S, granted leave

MAJOR E BISSETT, I M S, Deputy Sanitary Commissioner, in charge of the first range, to hold charge of the current duties of the office of the Deputy Sanitary Commissioner, in charge of the second range, in addition to his own duties, vice Captain C L Dunn, I M S, granted leave

LIEUTENANT COLONEL J G HOJEL, M B, B Ch (Dub), I M S, is granted, from the date of relief, such privilege leave of absence as may be due to him on that date in combination with furlough for such period as may bring the combined period of absence up to one year

HIS Excellency the Governor of Bombay in Council is pleased to appoint Lieut Col S H Burnett, M B C M, (Abdn), I M S, to act as Surgeon, Gokuldas Tejpal Native General Hospital in addition to his own duties as Presidency Surgeon, First District, during the absence on leave of Lieutenant-Colonel J G Hojel, M B, B Ch (Dub), I M S, or pending further orders

HIS Excellency the Governor of Bombay in Council is pleased to make the following appointments —

LIEUTENANT COLONEL P P KILKELLY, M B, B Ch (Dub), I M S, on return from leave, to resume charge of his appointment as Professor of Ophthalmic Medicine and Surgery, Grant Medical College, and Ophthalmic Surgeon, J J Hospital

MAJOR G MCPHERSON, M B, C M (Glas), I M S, on relief, to be Presidency Surgeon, Second District and in medical charge of the Common Prison, the House of Correction and the Byculla Schools

HIS Excellency the Governor of Bombay in Council is pleased to appoint Mr J F D'Mellow, L M & S, D P H, D T M & H (Camb), to act as Deputy Sanitary Commissioner for the Central Registration District vice Captain A F Hamilton, M B (Lond), F R C S, I M S, and during the absence on leave of Major H A F Knapton, I M S, or pending further orders

CAPTAIN W S J SHAW, M B, I M S, is granted, from the date of relief, such privilege leave of absence as may be due to him on that date and six months' study leave in combination with furlough for such period as may bring the combined period of absence up to fifteen months

HIS Excellency the Governor of Bombay in Council is pleased to appoint Captain O A R Berkeley-Hill, M B, I M S to act as Superintendent, Central Lunatic Asylum, Yeravda, during the absence of Captain W S J Shaw, I M S

CORRIGENDUM

At p 434 of Lt-Col. Newman's Article in November issue for "Messrs Max Weiss" should be read Messrs John Weiss and Son (the well known Surgical instrument makers)

Notice.

SCIENTIFIC Articles and Notes of interest to the Profession in India are solicited Contributors of Original Articles will receive 25 Reprints gratis, if requested

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BOOKS, REPORTS, &c., RECEIVED —

- Science Progress No 30
- Major Basu's Treatment of Diabetes, Panini Press
- Tuckey's Hypnotism and Suggestion 6th Edition Bailliere, Tindall & Cox
- Dr C Bose's Health of Indian Students
- Bernstein's Applied Pathology Hodder and Stoughton, and Frowde
- Eyre's Bacteriological Technique W B Saunders & Co
- Stitt's Practical Bacteriology H K Lewis
- Parke and Kenwood Hygiene 5th Edition H K Lewis
- Fitzwilliam's Operative Surgery Bailliere, Tindall & Cox
- The Prescriber's Pharmacopeia Hodder and Stoughton, and Frowde
- Bruce's A Fresh Study of Sciatica Bailliere, Tindall & Cox
- Mr Voher's Book for Mothers and Nurses J & A Churchill
- Col Kenneth Macleod on Sir Walter Scott's Doctors Life History of Insects Carpenter (Cambridge Manuals)
- The Flea H Russell (Cambridge Manuals)
- Harris Electricity for Nurses 2s 6d H K Lewis
- Tuberculosis Year Book 7s 6d Butterworth & Co, India
- Whitla's Materia Medica Livingstone & Sons 2s 6d

LETTERS, COMMUNICATIONS, &c., RECEIVED FROM.—

Capt Power Connor I M S, Chapra, Capt E H Hodge, I M S, Hongkong, Lt-Col D G Crawford I M S (ret'd London) Lieut T Bonnar, Dhurri, Capt V B Nesfield I M S, Banda, Major E G W Greig, I M S, Calcutta, Major J W Rait, I M S, Hooghly, Major A Hooton, I M S, Rajkote, Colonel Kenneth Macleod, I M S (ret'd), Southampton, Capt Kennedy, I M S, Dinapore, Lt-Col Maynard, F R C S, I M S Calcutta, Lt Col W E Jennings, I M S, Bombay, Major L Stephen, I M S, Bombay, Lt Col C C Barry, I M S, Raniganj,

Original Articles.

GLEANINGS FROM THE CALCUTTA POST MORTEM RECORDS

No VIII (*concluding*) *The primary causes of death and the most frequent errors of diagnosis in 1,000 medical post mortems*

(Read before the Medical Section of the Asiatic Society of Bengal)

BY LEONARD ROGERS, M.D., F.R.C.P.,

I.M.S.,

Professor of Pathology, Calcutta

DURING the eleven years that I have had the privilege of being connected with the Calcutta Medical College Hospital as pathologist over 1,000 medical post mortems have been recorded, a considerable majority of which have been performed by myself while nearly all the remainder were by such good observers as Lieutenant-Colonel F. J. Drury and Major J. W. D. Megaw, I.M.S. An analysis of this material cannot fail to furnish valuable facts regarding the relative prevalence of the more common causes of death. As the clinical diagnosis is as a rule entered in the records, I have also worked out the more common errors of diagnosis, for to be forewarned is certainly to be forearmed in such a case as this, and a knowledge of the mistakes in diagnosis most frequently made by the highly experienced physicians of this hospital should be of great service to those working under less advantageous conditions. The surgical post mortems are not included in the following figures —

I — Primary causes of death.

As more than one disease is frequently met with post mortem the whole series of cases have been carefully examined in order to classify them according to the primary cause of death. Thus, a case of kala-azar, ending with pneumonia, has been entered in the tables as kala-azar, while peritonitis following perforation of an amoebic ulcer of the large bowel is classed as amoebic dysentery. In addition I have analysed the post mortem results in 4,800 cases of the last 37 years and the figures, when allowance is made for the secondary diseases are so nearly parallel with those of the more closely examined 1,000 recent cases that those of the smaller series may be taken as being essentially an accurate representation of the full records of the last 37 years. In fact the only disease in which there is any marked difference is in the case of dysenteries, which were more common in the earlier years. As the diseases of the different systems have been dealt with in previous papers of this series, in the present communication only the general systemic diseases will be dealt with in any detail although

all the more common causes of death are shown in the tables. It will also be of interest to note the proportion of deaths due to diseases which are more essentially tropical in nature as shown in Table II.

TABLE.—I.

Primary causes of death and errors in diagnosis in 1,000 post mortems.

	Percentage	Clinical diagnosis recorded	Clinical diagnosis wrong	In Hospital under two days	Percentage of errors in diagnosis
FEVERS—					
Malaria	1.7	14	4	(1)	28.6
Kala azar	9.1	80	20	(3)	25.0
Typhoid	0.9	8	3	(1)	37.5
Septicemia	0.9	5	3	—	60.0
Plague	0.6	3	2	(2)	66.7
TOTAL	13.2				
OTHER SPECIFIC DISEASES—					
Tetanus	2.0				
Diphtheria	0.1				
Beri beri	0.4				
Anæmia	1.8				
TOTAL	4.3				
NERVOUS SYSTEM—					
Meningitis (non tuberculous)	1.9	14	2	(1)	14.3
Apoplexy	1.6				
Others	1.2				
TOTAL	4.7				
CIRCULATORY SYSTEM—					
Pericarditis	0.4	3	2	(1)	66.7
Endocarditis	0.5	4	2	(2)	50.0
Aortic valve disease	2.2	18	5	—	27.8
Mitral valve disease	0.4	4	1		25.0
Aneurism	1.0	7	4	(1)	57.1
Pulmonary atherosclerosis	0.8	7	5		71.4
Others	1.2				
TOTAL	6.5				
TUBERCULAR DISEASE—					
General Tuberculosis	2.1	17	5	(5)	29.4
Pulmonary phthisis	12.2	97	14		14.4
Meningitis	0.5	3			0.0
Primary intestinal	0.7				
Peritonitis	0.4				
TOTAL	15.9				
MALIGNANT DISEASE—					
Cancer	1.6				
Lymphadenoma	0.7				
Sarcoma	0.7				
TOTAL	3.0				
RESPIRATORY SYSTEM —					
Lobar-pneumonia	7.6	59	12	(3)	20.3
Gangrene of lungs	2.1	14	5	(1)	35.7
Broncho pneumonia	2.2	16	10	(2)	62.5
Bronchitis	1.9	17	9	(1)	53.0
Emphysema	0.4	7	1	(1)	14.3
Empyema	0.8	5	1		20.0
Pleurisy	0.4				
Septic pneumonia	0.2				
Others	0.2				
TOTAL	16.3				
Carr ed over					

TABLE I—(continued)

	Percentage	Clinical diagnosis recorded	Clinical diagnosis wrong	In Hospital under two days	Percentage of errors in diagnosis
Brought forward					
DIGESTIVE SYSTEM—					
Amœbic dysentery	5.7	45	18	(4)	40.0
Bacillary dysentery	4.1	36	12	(5)	33.3
Faecal doubtful	0.7	7	1	(1)	14.3
Diphtheria and enteritis	0.8	5	1	(1)	20.0
Cirrhosis of the liver	4.2	36	7		19.5
Liver abscess	2.2	17	4	(1)	23.5
Ulcer of duodenum	0.4	4	4		100.0
Cholera	10.7				0.0
Others	3.1				
TOTAL	31.9				
GENITO URINARY SYSTEM—					
Parenchymatous nephritis	1.2	9	0		0.0
Contracted granular kidney	2.4	22	7	(3)	31.8
Others	0.6				
TOTAL	4.2				
GRAND TOTAL	100.0				

TABLE II

Percentage of deaths from Tropical Diseases

	Percentage
Fevers (Malaria 17, Kala-azar 91 and Plague 0.6)	1.14
Beri beri and epidemic dirosy ...	4
Cholera ..	10.7
Dysenteries ..	10.5
Amœbic liver abscess ..	2.2
TOTAL	35.2

Thus a little over one-third of the total deaths were due to tropical diseases, which shows the vast amount of material for studying diseases of the tropics at the Calcutta Medical College Hospital and the utter impossibility of a single research worker making use of a tithe of it, a defect which it is hoped will be remedied with the advent of the proposed School of Tropical Medicine in the premier city of India.

I Fevers—The deaths from fevers are shown in section I of Table I. They total 13.2 per cent of all causes of which no less than 9.1 per cent were due to kala-azar, while only 1.7 per cent were caused by malarial fever, the two taken together totalling 10.8. In the full series of 4,800 post mortems the combined figure was 10.0 per cent, so there is no evidence of any marked decline in the death-rate from these fevers during the last few years, doubtless owing to the absence of any rapidly curative treatment for the predominant and deadly kala-azar. The small proportion of deaths from malaria is very striking, for although it is no doubt largely accounted for

by the well drained condition of Calcutta and the efficient treatment in the hospital, still the above figures serve to emphasize the conclusion arrived at in my report on the fevers in the Dinajpur district, in which it was proved that only a comparatively small proportion of the deaths shown in the vital statistics as due to fever in that very unhealthy district were caused by malaria. In Bengal at any rate kala-azar is a far more formidable disease than malaria itself, and one which calls for much more research by workers with the whole time available for such studies. All the fatal malaria cases were of the malignant tertian type, and two-thirds of them occurred in the month of October and November, half having been in November alone.

Typhoid Fever—caused 0.9 per cent of the mortality, the disease being really quite common among natives of India in Calcutta, as I pointed out in 1900, previously to which it was thought to be a very rare disease among them. The total 37 years' post mortem records show 0.5 per cent of deaths due to typhoid fever. In 8 cases in which the clinical diagnosis is recorded in 3, or 37.5 per cent, the disease was entered as remittent fever but in one of these the patient had been less than two days in hospital.

Plague accounted for 0.6 of the deaths, but this figure is of no importance as post mortems were not done on any cases in which plague was recognised during life owing to the death of a former pathologist from plague contracted at a post mortem examination. The few cases in the recent records are therefore nearly all septic and pneumonic forms not diagnosed as plague during life.

Septicæmia and Pyæmia—caused 0.9 per cent of deaths in the medical wards. Of the 9 cases 4 were found to be streptococcal in nature, one staphylococcal, while two others were septic pneumonias with pyæmia. In only the pneumonic cases was the condition partially recognised during life, the diagnosing being very difficult unless a marked leucocytosis is early discovered and cultures made from the blood.

The *Diagnosis* of the malarial and kala-azar cases remains to be discussed. Of the 14 malarial cases with a recorded clinical diagnosis it was wrong in 4, or 28.6 per cent, including one patient who died on the day of admission with a diagnosis of pneumonia. In the remaining three the diagnosis was respectively fever and cough, kala-azar and phthisis, the last two being excluded at the post mortem. Of 80 kala-azar cases 20 or 25 per cent were incorrectly diagnosed, but three-fourths of these errors occurred in the three years before the differentiation of the disease by the discovery of its parasite in 1903 and only one-fourth in the subsequent seven years, so it may be said that this disease is now rarely unrecognised. In 10, all in the first three years,

malaria fever had been diagnosed, in three pneumonia and in three phthisis and in two diarrhoea all of which except malaria are common complications of the disease

Other General Specific Diseases—These are few and not very important. *Tetanus* with 2 per cent of deaths, both in the whole 37 years records and in the last 1,000 cases, is the most common of them, and they were diagnosed correctly with the exception of one returned as broncho-pneumonia. *Tetanus* is thus far more prevalent in the medical wards in Calcutta than in temperate climates. *Diphtheria* caused 0.1 per cent of death, but no reliance can be placed on this figure as an indication of the true prevalence of the disease as *post-mortems* are very rarely obtained on children in this hospital. *Beriberi* and epidemic dysentery caused 0.4 per cent of deaths in the 1,000 *post-mortems*, but only 0.1 per cent in the 4,800 cases, showing the great rarity of the disease as a rule in Calcutta in other than Chinese subjects in whom *post-mortems* cannot be obtained.

II Tubercular Disease—This subject has been so fully dealt with in No II of this series of papers that it only remains here to discuss the common errors of diagnosis in this disease, which are not unfrequently 16.6 per cent of the total. In the case of pulmonary tuberculosis the errors only amount to 14.4 per cent, one-third of whom were only in hospital one or two days before death, while in generalised tuberculosis the figure rises to 29.4 per cent in accordance with the well-known difficulties of the differentiation of that form of the disease. In the five cases of general tuberculosis wrongly diagnosed the disease was returned respectively as pleurisy and diarrhoea, pleurisy and dysentery, heart disease, emrosis of the liver and septicaemia. In 14 wrongly diagnosed phthisis cases the disease was entered as bronchitis in 3, pneumonia in 2, and one each as bronchiectasis, pleurisy, fever, diarrhoea, dysentery, liver abscess, cholera and two as mitral regurgitation, the last four in patients who were only a day or two in hospital before death. The difficulty in differentiating some cases of phthisis from bronchitis and pneumonia is not surprising.

Malignant Tumours—These only caused 2.9 per cent of the deaths, a very small proportion compared with European experience, but partly accounted for by the low age incidence of the subjects, as pointed out in the first paper of this series. They may be classed as follows—

Cancer—Stomach 1, large bowel 2 primary of liver 4, primary of gall-bladder 3, bile duct 1, pancreas 4, and Fallopian tube 1

Lymphadenoma—Stomach 1, pleura 1, abdominal lymphatic glands 2, and unclassified 2

Sarcoma—Neck 1, liver 2, orbit 1, pleura 1 and lung 1

The most striking feature of the above figures is the comparative rarity of cancer as compared with sarcoma, a death rate of only 1.7 per cent, from cancer being remarkably low. The number of primary cancers of the liver, namely, nearly one-fourth of the whole is also noteworthy. All the diagnoses were verified microscopically. It must be borne in mind that the figures only relate to the medical *post-mortems*, but cancer is also comparatively rare in the surgical series.

IV Diseases of the Nervous System—As these have been further dealt with in paper No VII of this series little need be said here beyond pointing out that they only form 4.7 per cent of the total deaths three-fourths of which are due to either the various forms of meningitis (1.9) or the vascular lesions producing apoplexy (1.6 per cent). Both these classes of disease are usually diagnosed correctly as far as each group is concerned, although the particular variety obviously presents great difficulties in its accurate clinical differentiation, which it is unnecessary to go into here. Syphilitic disease of the brain and cord with 0.5 per cent and cerebral tumours 0.3 per cent form the bulk of the remaining nervous diseases.

V Diseases of the Circulatory System—These have already been so fully dealt with in paper No III of this series that only the common errors in diagnosis require to be referred to here. The number of cases is only 6.5 per cent of the whole series, which must be considerably less than in temperate climates, the marked difference being doubtless due to the great rarity of rheumatic fever in Lower Bengal, as I have already pointed out in the paper just referred to. As might have been expected the form of pulmonary atheroma, recently described by me as a not very rare fatal form of heart disease in Calcutta, was only once recognised during life. The great frequency of disease of the aortic valves in India is not yet sufficiently borne in mind, as is shown by the fact that 5 out of 14 cases, or 27.8 per cent it was incorrectly diagnosed during life, but in two of these the patient had been only one day in hospital before death. Aneurisms were only recognised during life in 3 out of 7 cases, being overlooked in 57.1 per cent although in only one had death taken place within a few hours of admission. Pericarditis was overlooked in two out of three cases and endocarditis in 2 out of 4. The rarity of organic disease of the mitral valve as compared with that of the aortic cusps, which I have previously pointed out, is well illustrated by the fact that 22 per cent of the mortality was primarily due to aortic disease, but only 0.4 per cent to mitral affections.

VI Respiratory Diseases other than Tubercle—These form no less than 16.4 per cent of the total, while if tubercle is included lung

diseases cause no less than 30.7 per cent, or nearly one-third. This very important class of diseases has been dealt with in a separate paper, so only the common errors in diagnosis of them will be pointed out here, which were numerous. Lobai-pneumonia was incorrectly diagnosed in 12 cases or 20 per cent, only three of which were in-patients dying less than two days after admission. In no less than 9 phthisis had been returned as the cause of death, in one typhoid, while one moribund patient was entered as cholera.

Gangrene of the lungs was overlooked in 5 out of 14 cases, or 35.7 per cent including one moribund patient. In 4 phthisis and in one hemiplegia had been diagnosed.

Broncho-pneumonia was still more frequently unrecognised during life, no less than 10 out of 16 cases, or 62.5 per cent being wrongly returned, namely, twice each as phthisis, uræmia and remittent fever respectively, and once each as emphysema, heart disease, tubercular glands and cholera, the last admitted in a moribund condition.

Bronchitis was incorrectly returned in 9 out of 17 or 53 per cent, phthisis having been diagnosed in 3, mitral regurgitation in 2 and Bright's disease in 2, and pneumonia and cirrhosis of the liver in one each.

On the other hand, emphysema was only missed once in five cases, and emphysema once in seven. We see from the above data that phthisis is the disease which gave rise to most difficulties in diagnosis, being both frequently overlooked and also diagnosed when some other condition was present. This is very important in view of the proposed introduction of sanitarium treatment in India and indicates the necessity of frequently repeated bacteriological examinations for the detection of the disease in its early stages. The mistakes have been fewer during second than in the first half of the last decade which shows satisfactory progress.

VII Diseases of the Digestive Tract—These constitute no less than 31.9 per cent of the total or almost one-third. Moreover, they include no less than 23 of the 35 per cent of more especially tropical diseases, namely, cholera 10.7, dysenteries 10.5 and amoebic liver abscess 2.2 per cent. Cirrhosis of the liver with 4.2 per cent forms the next most numerous division, which I have already dealt with fully in No IV of this series of papers. The post-mortem changes in cholera I have described in my work on that disease, and dysenteries and other ulcerative conditions are dealt with in a special work published recently. The more common errors in diagnosis will alone be recorded here, their importance being exceptionally great, specially with regard to the dysenteries.

Errors in the Diagnosis of Dysenteries—(A) amoebic dysentery (5.7 per cent). Bearing in mind that I am only dealing with the cases in which dysentery was the primary cause of death, terminal affection being excluded, it might be thought there was little chance of mistaken diagnosis. This, however, is very far from being the case, especially as regards the amoebic form of the disease, the early recognition of which is of such great practical importance both as regards its own treatment and also for the prevention of serious liver complications. Thus out of 45 cases with a clinical diagnosis, in 18 or 40 per cent, it was erroneous, although only four of them had been less than two days in hospital before death. Tubercular diarrhoea and simple diarrhoea were returned in four cases each, peritonitis in 2, tubercular peritonitis in one, and hepatitis, gangrene of rectum, intestinal obstruction, broncho-pneumonia, malaria, fever, and anaemia respectively in one each. The great variety of these diagnoses is in itself significant, although most of them are either some form of diarrhoea or one of the complications of amoebic dysentery. As the causative amoeba can usually be very easily detected in the stools of amoebic dysentery patients, it is clear that the microscope requires to be much more frequently used in this class of cases than at present obtains. The fact that typically dysenteric stools are frequently absent in the disease also should be constantly borne in mind. A febrile condition nearly always means hepatic complication, the early recognition of which is equally important. Now that it is established beyond doubt that ipecacuanha and emetine have a specific action in amoebic disease, the early diagnosis of these affections is of the utmost practical importance.

Bacillary Dysentery 4.1 per cent.—In this form 12 out of 36 cases, or one-third were wrongly returned, including 5 in which death took place within two days of admission. In 4 simple diarrhoea and in 4 more tubercular diarrhoea had been diagnosed, while in one each phthisis, acute yellow atrophy of the liver, cholera, and remittent fever and meningitis respectively had been entered in the clinical notes, the last three having been in-patients only one day in hospital. As in some cases of bacillary dysentery the stools are not characteristic of that disease, only bacteriological examinations will avail for their diagnosis, so the facts now put on record should stimulate further research in this direction.

Cirrhosis of the Liver—I have already shown is exceptionally prevalent in India and its differentiation from other ascites producing diseases is not always easy. Thus in 7 out of 36 cases an erroneous or insufficient diagnosis was made, although none of the patients had been less than two days in hospital. These cases

were respectively returned as ascites, cardiac biopsy, tubercular peritonitis, dilated heart and emphysema, cancer, anaemia and diarrhoea, so no one disease was commonly suspected in these cases.

Abscess of Liver was overlooked in 4 out of 17 cases or 23.5 per cent, only one of whom died on the day of admission. The mistaken diagnoses were pyonephrosis, pyopneumothorax, general tuberculosis and cystic kidney, the last being in the moribund patient.

Ulcer of the Duodenum was the cause of death in four cases which had been respectively diagnosed as typhoid and pneumonia, dilated stomach, anaemia and aneurism. The absence of simple ulcer of the stomach is noteworthy.

Enteritis 0.8 and *Malignant Jaundice* 1.1 per cent were the remaining most frequently fatal digestive diseases and they presented no difficulty in diagnosis.

Cholera cases were correctly diagnosed, but the number of post-mortems on cases of this disease has decreased very greatly during the last few years.

VIII Genito-Urinary Diseases—These only formed 4.2 per cent of the cases, namely, granular kidney 2.4, parenchymatous kidney 1.2 and other diseases 0.6 per cent. These are low figures, but they have been dealt with in a No VII of these papers. The parenchymatous form was correctly diagnosed, but the more insidious contracted granular kidney cases were returned under other headings in 7 out of 22 cases, or 31.8 per cent, three of the seven having died within two days of admission to hospital. They were returned clinically respectively as parenchymatous kidney, chronic diarrhoea, myocarditis, cerebral haemorrhage, and in the three nearly moribund cases as convulsions, concussion of the brain and fever.

Lastly there were twenty cases of rare and difficult diseases which were not recognised during life, several in-patients admitted in a nearly moribund condition, but which do not appear to be worth enumerating. The total proportion of erroneous diagnoses was 24 per cent, of which 6.3 per cent had been less than two full days in hospital at the time of their death. Cases in which more than one disease was present and one of the main causes of death was diagnosed correctly have not been included among the errors. Those who have had most experience of the number of late admissions into Indian hospitals with often a complication of diseases present, will be least surprised at the proportion of mistakes here recorded for the purpose of warning less experienced medical men against the many pitfalls which await them in practise in the tropics.

VENEREAL DISEASE IN THE ARMY OF OUR INDIAN EMPIRE.

BY P. HEHIR,

COLONFL, I.M.S.,

Asst Dir of Medical Services, 6th (Poona) Division

In the following remarks it is proposed to deal with the extent to which venereal disease prevails in the Army in India, the nature of venereal disease, its dangers, and the various means of preventing it.

Widespread error as to the nature of Venereal Disease—On three occasions in our experience during the last few years in one way or another the question of venereal disease in the Army cropped up in conversation with officers of average intelligence, and we were surprised at the little that is known about this class of diseases. The general notion that prevailed appeared to be that once a man had the misfortune to acquire venereal disease of any kind (except gonorrhoea) he is necessarily *hois de combat* ever after, and that he can never become an efficient soldier again.

Statistics of Venereal Disease in India, &c—Venereal disease has undergone a vast decrease in the Army during the last 25 years, but every now and then in some stations there are fresh outbursts of it due to circumstances which, we feel confident, are to a large extent removable. It has decreased in both Indian and European troops in recent years, but the decrease in Indian troops has not been nearly so marked as in European troops.

YEARS	VENEREAL DISEASES, ADMISSION RATE PER 1,000	
	Indian Troops	European Troops
1903	24.5	274.0
1904	20.6	198.5
1905	19.6	153.7
1906	16.2	117.3
1907	14.7	89.9
1908	15.2	69.6
1909	16.4	67.8
1910	16.9	59.8
1911	14.1	53.1

The total admissions in India and Burma in European troops in 1908 with a strength of 68,933 were 4,801 or 6.96 per 1,000, in Indian troops with strength of 126,975 were 1,934 or 15.2. In 1909 there was a slight decrease amongst European troops, and a small increase amongst Indian troops. In 1910 and 1911 there were further marked reductions amongst British troops, in 1910 it was a trifle higher and in 1911 much lower amongst Indian troops.

Next to malaria and fevers of unknown origin venereal disease is the most prevalent cause of inefficiency in our Army in India. One of the most dominating features in the statistics of disease in our Army is that the amount of venereal disease is now only about one-eighth of what it was fifty years ago. In the Home Army since the year 1894 there has been a continuous rapid fall, interrupted only once (1908), when the return of a large number of men from South Africa caused a great increase of prevalence. The amount of syphilis is now one seventh of what it was in 1894. "The same phenomena are apparent in the curves showing the incidence of venereal disease in the Army in India. The period of absolute maximum prevalence was somewhat later in this case, but the continuous fall commenced about the same time, and has continued up to the present day."

In the French and German Armies there has also been a marked decrease in the last thirty or forty years. Thus in the German Army between 1880 and 1888 the

admission rate for syphilis alone was 10.2 per 1,000, this being a little higher than for the previous decade. The rate in 1907 was 4.7 per 1,000. "The decrease of late years has undoubtedly been due to the tighter screwing of the military machinery." The Armies of Italy and Austria both show a distinct increase. Thus, in Italy, whilst the admissions for syphilis were 8.3 per 1,000 in 1884-85, they were 13.3 in 1904-05, and have been in the neighbourhood of that figure for the past twenty years. In the Army of Austria there has been a little variation, but the figures have been continuously higher than the other Armies of Central Europe.*

The United States Army, which in many ways is like our own in relation to venereal disease, has shown a regular increase in admissions since the beginning of the war with Spain in 1898. This is attributable to the fact that the annexation of the Phillipines and Cuba brought the soldier into contact with races of lower moral tone than his own.

The Army Medical Department Report for 1910 gives the following table showing the different rates of prevalence of venereal disease in different Armies —

	Per 1,000	Per 1,000	
Germany, 1905 OG	19.8	Russia, 1906	62.7
France, 1906	28.6	United States, 1907	167.8
Austria, 1907	51.2	United Kingdom, 1907	68.4

Our Army and that of the United States differ from Continental Armies in the fact that service is voluntary and extends over a comparatively long period, e.g., the British soldier serves for seven and the German soldier for two years, in the United States the term of service is even longer than ours and the age of enlistment higher. With voluntary service goes a higher rate of pay than universal service, and more leisure to the individual soldier, the long period of service allows of a less strenuous course of military training than in short service armies. The outcome of this is that our troops and those of the United States have not got their noses held so closely to the military grindstone as their congeners in the service of the German Emperor or the French Republic. A German officer recently remarked "When we have finished with our young men in the evening, they are not in a condition to think of anything but their beds and a good night's sleep"†

A further difference exists in the conditions of our soldiers and those of the United States as compared with troops of Continental Armies, and that is associated with the regulation of prostitution. Until recently compulsory registration and periodical examination of prostitutes was almost universal on the Continent. In the United Kingdom it was tried and given up. In the United States it was tried on several occasions, but not systematically continued. It has never been definitely proved that these repressive measures keep down the venereal rates in civil communities. If then it can be shown (and this we could readily do if it were necessary) that the venereal rate is lower in Armies than in civil populations, the lower incidence amongst troops must be due to other causes than the regulation of prostitution and other repressive measures. On a later page we will enumerate and deal with the various causes to which, in our opinion, the reduction of venereal disease in our Army is attributable.

Varieties of Venereal Disease. — All forms of venereal disease are due to infection by specific microbes that are communicated by persons already suffering from the disease. In general terms venereal diseases include three distinct affections—(1) gonorrhœa, (2) soft chancre, venereal sore, or ulcer of the penis, and (3) hard chancre, with its probable sequels.

1. *Gonorrhœa.* — Gonorrhœa is a specific local disease, the main indication of which is a discharge of pus from the penis caused by a distinct microbe (gonococcus).

Invasive the cells of the mucous membrane of the urethral canal. It is characterised by pain and burning urination and has often a protracted course. If neglected, it may give rise to a form of inflammation of one testicle, of the bladder, and other complications. When not neglected it, as a rule, remains a local malady. It sometimes gives rise to a suppurating bubo in one or both groins. In the absence of personal cleanliness while the attack is on, a very acute form of inflammation of the eye may occur due to the membrane covering the eye becoming infected with the pus from the urethra, and this may end in destruction of vision of the affected eye. In very exceptional cases the germ gains access to the circulation, generalises and may affect joints, possibly the heart, eyes, brain or other organs. In all our experience with troops we have only seen two such cases—these complications are, therefore, very rare. In the Army in India the ordinary case of gonorrhœa is curable in about a month, after which it does not affect the man's future as an efficient soldier. Recurrent gonorrhœa may in from ten to twenty years develop what we call an organic stricture, with its possible train of complications, but this very rarely occurs while the soldier is a fighting man. The use of the towel or handkerchiefs of a person suffering from the disease may lead to the severe disease of the eyes just mentioned. The disease usually comes on about the fourth day after sexual intercourse with an infected woman and the most careful precautions such as washing and disinfection, and injecting caustic solution or permanganate of potassium solution immediately after acquiring the infection often fail to prevent it. It should be remembered that gonorrhœa when neglected may, and often does, affect the procreative power of both men and women.

Gonorrhœa is popularly considered to be a comparatively mild disease and we find that many men are in no way ashamed of suffering from it. It sometimes, however, leads to fatal complications in man, although this is more frequently the case in women. The complications and sequels may be many and serious, there being no specific remedy of approved efficacy, it is apt, unless treated very early and very thoroughly, to become a chronic disease of interminable duration and perpetual inconvenience. A young man imagining himself cured when he is not, may give the disease to his young wife. About 50 per cent of the women who have suffered from gonorrhœa are sterile.

2. *Soft Chancre.* — The soft chancre is a purely local malady in the form of an ulcer caused by a specific bacillus infecting the penis, and in many cases the lymphatic glands in the groin, giving rise to a suppurating bubo, where its effects cease. The virulence of the local infection may, in exceptional cases, cause widespread destruction of the part originally attacked. These cases get perfectly well and then misfortune does not militate against the efficiency of the victims as soldiers. Soft chancre comes on a few days after intercourse with an infected woman, and the most careful precautions, including washing and disinfection immediately after intercourse, often fail to prevent it. This disease is less frequent than either gonorrhœa or syphilis.

3. *Hard Chancre.* — The third variety of venereal disease is what in its first stage is known as *hard chancre*, which usually leads to the general constitutional condition known as *secondary syphilis*, which may go on to *tertiary syphilis*. Syphilis is a chronic infectious disease, characterised by various lesions of which the initial one is a hard chancre (a specific ulcer on the penis). The disease is in the vast majority of cases acquired by sexual intercourse, the chancre appearing in from two to three weeks. Soon after the chancre appears the glands in both groins become enlarged and hard. Late on other lymphatic glands enlarge, ulcers occur in the mouth and throat, eruptions appear on the skin, the eyes may become inflamed, and there is much constitutional disturbance. In the primary stage the local sore only is infectious. After a few weeks the blood stream is affected, the secondary stage begins and

* Venereal Disease by Dr D. White, and Lieutenant Colonel C. H. Melville, R.A.M.C., in *The Lancet*, 9th December 1911, page 1616.

† Loc. cit.

the disease is generalised in the system. The cups, glasses and spoons which he uses and the pipe which he applies to his lips, may convey the disease to others as the poison may be inoculated into all parts of the body. If not treated, the person may remain a source of disease for two and a half to three years, and then in the full tertiary stage every organ and tissue of his body is diseased. Mercury undoubtedly acts as a specific remedy in this disease, but complete cure is only effected by early and prolonged treatment by it. This is the form of venereal disease which is such a prevalent cause of inefficiency and invaliding in the army. In it the essential cause is an excessively minute worm-like spirochaete (*Spirochete pallida*) which has recently been successfully inoculated into anthropoid apes, and it is possible that we are within a measurable time of acquiring further information on the subject which may ultimately be utilised in the practical treatment of these cases. The poison of true syphilis is slow in attacking the constitution, is very lasting in its effects, and its treatment to be complete has to be carried on for a long period. Whilst this is the only form of really serious venereal disease, one would emphasise that it is not necessarily a cause of either prolonged inefficiency or excessive invaliding—it is only exceptionally that the disease runs on uncontrollable by treatment, in which case invaliding becomes inevitable. The experience of the last six or eight years indicates that the majority of these cases are absolutely amenable to curative treatment and the men rendered thoroughly efficient. With the experience of several Gurkha regiments in mind, and the recorded evidence of many R.A.M.C. officers we have no hesitation in repeating that in the vast majority of cases, specific syphilis may be cured, and in some the disease may be completely eradicated. This is a fact that deserves the attention of the British Officer and should enlist his sympathy in assisting Medical Officers to carry out the prolonged course of treatment necessary. The new method of treatment that is now under trial, may in the future be shown to shorten the length of time the man is to be kept under it, but at present we are scarcely justified in making any modification of the rule that the course of treatment should last two years.

The children of syphilitic patients are diseased before they are born, and, in a large percentage of cases, continue diseased throughout life. For some years after infection the disease is transmissible to the wife. The children are liable to the same ills, and they in turn may transmit them to the third generation. Cases of the later stages of syphilis in civil life at home tend to fill our hospitals and asylums with senseless wrecks of humanity.

Systematic specific treatment required to restore efficiency of cases of Syphilis—One of the most comprehensive, complete, and best ways of restoring efficiency in such cases is the order directing that they should be treated specifically, systematically, and for at least one year, after which they should be watched for another year.

Syphilis is in the vast majority of cases acquired by sexual intercourse with a woman suffering from the disease, but it may be acquired by a healthy man sharing the pipe of an infected comrade and in other ways.

The third stage usually takes some years to develop and is now much less frequently seen in the Army than it used to be, chiefly on account of the persistent treatment based on the sound principles carried out.

One cannot insist too much on the principle of keeping cases of syphilis under observation and treatment without being actually in hospital. After the disappearance of the primary and early secondary manifestations of the disease in these cases, the patient need not necessarily be kept in hospital. His attendance once a week is all that is required and eventually less frequently. In this the co-operation of Commandant, Adjutant and Medical Officer is essential. We know of numerous cases of British and Indian troops who have been treated by a combination of intravenous injections of salvarsan and intra muscular injections of mercurial cream, and are

now cured and as fit as any of their comrades. Apart from his physical sufferings, a man who has the misfortune through his impudence to acquire true syphilis goes through much mental torture. It appears to be undesirable in the interests of the service to treat these men as if they were criminals, every effort should be made to cause them to understand that with a proper course of treatment the disease in a large proportion of cases will be cured, and their efficiency as soldiers probably not affected. From the Medical Officer, a case of venereal receives the same care, attention and consideration as any other sick soldier under his treatment.

Our experience with regard to the effects of *salvarsan* in the cure of syphilis is as yet insufficient to justify our expressing an opinion as to its merits, but so far as it goes seems to indicate that in certain cases it rapidly brings about a cure. Nevertheless, it is undoubtedly the case that we are daily becoming more disappointed in our expectations in regard to the effects of *salvarsan*, and are finding out that it is not the sovereign panacea for all cases of syphilis it was originally thought to be. In many cases the effects appear at first to be magical, but time shows that the good results are not always lasting.

A certain limited number of cases of venereal disease is acquired in European troops by contagion from latrines, from discharge of pus left on the seats by infected men. This can, of course, only occur in the active stage of the disease, and no man with venereal in this stage should be outside the hospital. In the hospital there should be special latrine seats for venereal cases. Such infection can to some extent be avoided by covering the seats with a disinfectant.

We have not given an exaggerated picture of the forms of venereal disease—the foregoing description is known to all military medical officers to be true and accurate.

Prevention of Venereal Disease—In our opinion the decreased venereal rate in the Army is due to several causes, especially to an increase of temperance and a higher moral tone among the men, greater keenness in athletics and outdoor games and sports generally, greater resources in the shape of useful and sensible diversions during their leisure hours through institutes, soldiers' homes, young men's Christian association rooms, libraries, etc., and improved methods of treatment of these diseases.

Effects of intemperance and temperance in the prevalence of Venereal Disease—A considerable percentage of men acquire venereal when they are more or less under the influence of alcohol, that is, when they have been temporarily deprived of their will-power, judgment, and often their common sense. In this condition these men lose power over their inclinations and subsequently neglect to take such precautions as may, with luck, enable them to escape unscathed. It is impossible to lay too much stress on the fact that the greatest factor in the reduction of venereal disease in the Army has been the comparatively rapid growth of temperance in the use of alcoholic beverages. We do not refer to actual total abstinence, but to a more or less universal recognition on the part of men as to the amount of alcohol that is not likely to do them any material harm and which they do not exceed.

A combination of circumstances associates alcoholic intemperance and venereal disease. Intemperance tends to excite men's passions, while it simultaneously depresses the higher mental faculties. The devil may care frame of mind and fuddled state of the brain induced by inordinate indulgence in alcohol lead men to neglect the adoption of the precautions they would have carried out if in a more rational mood. A search through the records of British units will show that men who are most addicted to alcoholic habits are likewise those who have the largest number of admissions into hospital for venereal disease. This is one reason amongst many others why temperance should be encouraged in every reasonable way in the Army. Temperance, however, is a virtue that cannot be enforced by

regulations or orders—like other virtues it must be the operation of a man's own moral sense working from within.

Improvement of the moral tone of the Army.—We must continue to strengthen our endeavours to raise the moral character of the soldier by education, to increase his intelligence, to widen his sources of interest, to secure for him suitable ways and places in which to spend his evenings in a useful and sensible manner, and to provide him with appliances for his outdoor games and sports.

It is unfortunately the fact that the victim of venereal disease is a man who has to a certain extent been degraded, he has lost some of the respect of his comrades, non commissioned officers and officers that he had previously possessed, but what is far more serious to him is that he has lessened his respect for himself. This moral degradation is an inseparable attribute of venereal infection. The mental anguish suffered by some cases of venereal disease is most pathetic to witness. A soldier might well ask himself "Is the game worth the candle," or whether the satisfaction he gets from impure sexual intercourse is in any way commensurate with the dangers he runs?

Another influence that should deter the soldier from running the risks of acquiring venereal is the credit of the unit with which he is serving. A battalion with a high percentage of venereal cases is marked, and if that percentage is excessive, it is excluded from field service. It is unnecessary to recall instances where this exclusion has actually been carried out. It is very necessary to eliminate such battalions from the field, for they are only an incumbrance to it. No man with any existing manifestation of venereal disease should be allowed to accompany a force taking the field.

Sexual intercourse unnecessary to good health.—There is a prevalent notion amongst men that sexual intercourse is essential to health, to physical vigour and to maintain manliness. The proper outlet for any superfluous energies of the soldier in India is a healthful amount of manly physical exercise, whether this takes the form of military training, marching, fatigues, or outdoor games. Soldiers who take a serious interest in their profession, who are athletes, or have a keenness for outdoor games, are seldom those who fall victims to the imprudence against which we are inveighing. We repeat that sexual intercourse is in no sense essential to health, the youths who form the greater part to our Army in India are certainly not improved by it, and would be healthier and stronger men without it.

Education on Venereal Disease.—We strongly advocate that all men receive instructions as to the nature of venereal disease. It is not suggested that such education will eventually eradicate venereal in the Army. There are men who know from previous personal experience what the risks of impure sexual intercourse are, and who still run the gauntlet. Nevertheless we feel fully confident that when the ignorance of the average mind regarding the nature and evils of venereal disease is removed, there will be decidedly fewer cases of infection. The chief method of imparting such instruction is through lectures given by Medical Officers of units, and we would here strongly recommend that periodical lectures on this subject be delivered to all non commissioned officers and men. These lectures should show definitely and from the physiological standpoint that sexual intercourse is not necessary to good health, they should describe the different forms of venereal disease, explain the probability of infection after intercourse, and point out the dangers of these diseases to the man and to his future family. The lectures should be illustrated by pictures, diagrams, and drawings, these will carry more weight regarding the dangers of venereal disease than mere descriptions of them.

Improved methods of treatment and administration.—As previously stated, an important cause of the reduction of venereal disease is the improved methods of treatment. In regard to cases of syphilis, in

addition to the medical history sheet, there is kept up a special syphilis sheet for each case of this disease, on which is recorded a history of the illness, the symptoms and treatment, this sheet always accompanies the man so that his course of treatment may be continued. In addition to these a special register is kept up in which the names of all men under treatment for the disease is entered, so that at any moment we can ascertain the number of men under treatment in the station and their identity. The record of the individual cases is not closed until the man has undergone a two years' course of treatment and been free from symptoms for one year.

Preventive applications, etc.—In several Armies in Europe, and in the United States men are provided with facilities for personal ablution after sexual connection. In the United States small packets are also issued containing antiseptic solution, calomel ointment, and cotton wool. This was adopted in the Phillipines with some success. The issue was preceded by a lecture to the men in which the dangers associated with irregular intercourse were pointed out and continence was shown to be not only harmless but positively beneficial. In India we adopted a similar method for some time. There is something to be said both for and against it. Many men possibly think that when they are provided with these so called "preventives" they may indulge in impure sexual intercourse without apprehension of danger of infection, and if such a notion prevails we should remember that it is no duty of any authority to assist men to be vicious with impunity.

"In the Austro Hungarian Army, by an order published in May 1907, men are encouraged, but not compelled, to use a 1 in 1000 solution of corrosive sublimate for ablution and a 3 per cent solution of albargin for urethral injections. In the neighbourhood of the entrance to barracks a room is provided with the necessary equipment, solutions, etc., and the men are instructed in the advantage of their use. A register is kept, and the men enter their names, with the day and hour of using the preventives. In every case of venereal disease a note is made whether the man has used the preventives or not. In some garrisons this system is said to have effected a decrease of 62 per cent. in the cases of venereal disease."*

Considering the slowness of the infection in true syphilis it is possible that thorough washing of the external genitals after impure sexual intercourse and strict attention to cleanliness and the addition of a disinfectant to the water used, such as perchloride of mercury (1—500) or lysolform (1 per cent) subsequently, has some influence in preventing infection, although these measures cannot be relied on and often fail.

It has recently been stated on authority that an ointment consisting of one part of calomel and two parts of lanolin has proved a preventive if rubbed into the male external genital (penis) within 20 minutes after exposure to infection. This is stated to have been proved by external inoculation of syphilitic virus and the subsequent use of the ointment. We await more proof in regard to this before expressing an opinion as to its efficacy.

These are all, however, only attempts to evade the penalties for immoral conduct. Chastity, morality, healthy living, and a due comprehension of the terrible nature of at least one class of venereal disease, are amongst the real precautions. Officers and non commissioned officers should explain to the men the nature and consequences of venereal disease. The fact that the syphilitic man transmits the disease to his children should he marry is a matter for grave consideration, and if properly explained to soldiers will bring home to them the risks they run in promiscuous intercourse with impure women.

The real method of prevention is complete abstention from sexual intercourse with women leading an immoral

* Col H R FIRTH, *Military Hygiene*, p 40

life Men should avoid the possibility of acquiring venereal No person who risks contagion is ever safe The risk is always great, and the consequences may completely wreck a man's career, make a permanent crook of him. Continent men are, as a rule, far better soldiers than the strongest men who cannot control their sexual passions.

Some men will, we apprehend, continue to be foolish enough to allow their inclinations and passions to conquer their common sense and better judgment, and imprudently hazard acquiring venereal infection When they do so they should at least adopt every possible precaution to endeavour to escape the risks they have run by cleansing themselves thoroughly immediately afterwards It is not likely that a man well under the influence of alcohol will carry out these precautions, this is a very special reason why no man in this state should ever run the risk of acquiring venereal disease

Effects of roadside prostitution.—From definite inquiries and investigations we have ascertained that a very large proportion of the men who suffer from venereal disease in India and Burma acquire their infection from prostitutes who haunt the road sides, jungles, cantonment gardens, and other clandestine places after dark We have assured ourselves that the vast majority of the women who ply their trade in this way are infected with one or other form of venereal disease, and the chances are much in favour of intercourse with these women being followed by venereal infection Many of these women are the dirty degraded outcasts from the civil community, who seek the shades of night to hide their filthy garments and persons.

Disciplinary punishments—The man who is in hospital for venereal disease has incapacitated himself from performing his duty by his own fault and negligence He has ignored the warnings received in regard to the results of impure sexual intercourse He does not earn his pay, and if there were no punishment attaching to these circumstances, it is possible that men who are constitutionally indolent would exult at being kept in hospital for such disease Indeed, it is on record that in one Army where stoppage of pay is not practised for venereal admissions, a large number of men consorted with certain women known to be suffering from gonorrhoea with the express purpose of enjoying a slack time in hospital

The duties of soldiers who by their own impudence acquire venereal disease have to be performed by their healthy comrades Should syphilis be the form of the disease acquired they run the risk of (1) having to be invalidated, and, should they marry subsequently, of (2) handing down a progeny of diseased children who may be thrown on the parish for relief The man who thus recklessly places himself in this position is a failure as a soldier in military life, and as a citizen in civil life after he has left the Army

It is necessary to impose certain deterring conditions on soldiers who acquire venereal disease One of these in British troops is that of depriving them of a portion of their pay (service pay or efficiency pay) while in hospital, in addition to the usual hospital stoppages On this account some men conceal their disease This however, is not the only cause of concealment, for cases of this crime occur amongst our Indian troops also, although no part of their pay is deducted, because of their suffering from venereal disease It is urgently necessary that all officers should impress on their men the perils of concealing this class of disease, all men should be encouraged to report sick at once Delay in the treatment of venereal disease is always dangerous to the man himself and to his comrades in the barracks who may in one of many ways acquire infection from him We have no hesitation in recommending that all cases of concealment of venereal disease should be reported by Medical officers of units, and that the men be punished in accordance with Section II of the Army Act In connection with this subject it is laid down in

The King's Regulations, paragraph 462 —In every unit there is to be an order directing that a soldier who is suffering from venereal disease is to report himself sick without delay This order will be read to the unit on parade at intervals not exceeding three months, care being taken that it is specially brought to the notice of recruits on joining

PRELIMINARY NOTE ON ASINO-VACCINE

BY W. C. HOSACK, M.D.,

Port Health Office, Calcutta

RECENTLY when on deputation duty at Marseilles I had an opportunity, thanks to the kindness of the British Consul, Mr Guiney, of inspecting the vaccine laboratory in charge of M Huon, Director Everyone who has had practical experience of the preparation and maintenance of vaccines, particularly out in the East knows the difficulties that perennially crop up in connection with maintaining the vaccine at a standard strength Various methods, particularly the use of rapid passage of the virus through rabbits, have been used to regain strength when the vaccine has degenerated and lost its power, but too often the results are unsatisfactory and the stock has got to be renewed from Europe, probably from some strain recently recovered from spontaneous cow-pox It will therefore be of some interest and value if I give a brief summary of a process of regenerating attenuated vaccine by a passage through asses instead of calves, as gathered from a most courteous and lengthy demonstration by M Huon and from literature and photographs supplied by him.

It may be stated that the enthusiastic description of this new vaccine and its success which I received from M Huon, was fully confirmed by one of the leading general practitioners in Marseilles Dr Hawthorn informed me that whatever scepticism there had been at first had been obliterated by the uniformly good results obtained, not only by the very high percentage of success in revaccinations, but also by the practical results in the health of the city Marseilles just as Calcutta suffers from periodical outbreaks of smallpox and one was due last year An epidemic started with numerous importations of cases amongst Arabs and other insanitary and primitive inhabitants of the Mediterranean littoral, the cases reached a considerable number per week, about 20, and there was every indication of a big epidemic Nevertheless, the disease died down completely and in the opinion of the profession the abortion of the epidemic was due to the general use of the new vaccine for the last four or five years

The general principle that underlies the new process of vaccine preparation is the fact that in addition to cow-pox there is a spontaneous

disease of the equipedes, the horse and the ass, horse-pox or ass-pox, and these latter are the primitive and more active diseases. From more than one reference I gather that Dr Chaumier of Touis was the original discoverer of this fact, and that M Huon has been one of the pioneers in adopting the new process.

M. Huon's first efforts in 1906 were not entirely successful owing to the presence of extraneous organisms, due to the original vaccine having been glycerinized for too short a period, only eight days. His present recommendation is eight weeks contact with glycerine in cold storage. Two vaccines are at present in use A & M. A is result of the vaccination of an ass with ordinary calf vaccine. M Huon insists on the most scrupulous preparation of the animal and of the scene of operation, just as in an ordinary surgical operation. Even the water with which the shaved side of the animal is finally washed, has come through a Pasteur filter. A tilting table is used, the ass is first strapped to the table in a standing position and the table is then tilted to a horizontal position. The whole side of the animal is then shaved and thoroughly cleansed with soap, then a concentrated solution of borate of soda is used and a final washing with filtered water completes the process. The vaccine is then smeared on and scarifications are made vertical to the back with a six-bladed lancet, care being taken to avoid the drawing of blood. This is done in successive sections. On the 5th day, as against the 6th day in ordinary bovine vaccine, the pustules are very voluminous and present the following characters —

- "(1) An umbilical zone very sharply marked"
- "(2) A peripheral zone, white with a rectilinear and not a wavy margin"

"(3) A zone of dermic infiltration, fairly extensive, at the basis of each pustule, as can be felt on squeezing the pustule between the finger and the thumb."

Pustules of asinine origin are more defined, larger and have greater lymph and pulp contents than those of bovine origin, a yellowish appearance of the pustule is due to extraneous organisms and lymph should not be collected from such. To collect the vaccine from the pustules a Volkman spoon is used, first lightly and then deeply. The first collection is used for subsequent animal vaccinations, the second collection, sanguineous and pulpy, is used for human vaccination, or rather revaccination, after glycerination and cold storage for eight weeks. It can be used for primary vaccination when extreme rapidity of protection is required. It should be noted that vaccine A asinine vaccine, is rather too marked in its reaction for primary vaccination. It is used for revaccinations and for the preparation of mixed vaccine, vaccine M. As an indication of the

potency of the vaccine A, it may be noted that M Huon and his two assistants contracted pustules on the hands as the result of their first experiments and so did butchers who subsequently dealt with the animals. Preliminary vaccination for laboratory hands is therefore advisable when possible, in view of the risk of infection of the eyes.

Vaccine M is the one generally used for primary vaccination. The procedure adopted is as described above, but the lymph producing animal is the calf instead of the ass. The first scrapings from the ass are used to vaccinate the calf and so we get a vaccine, one remove from the ass, milder in action and so more adapted to primary vaccination.

It has been found by experiment that calf vaccine regenerated by the ass rapidly loses strength if it is passed through a series of calves, and that to keep a vaccine at full power it should be only one remove off the ass.

The statistical figures given for success of vaccine in revaccinations are admittedly rather incomplete. They show a rise from 18 to 22 per cent of successes to 54 55 or 67 33 successes for those who presented themselves at the revision. I gather that in private practice the figure is even higher.

It must be admitted that there are indications of another side to the question, so, though they are considerably minimized by the generally favourable opinion of the medical profession in Marseilles, they had better be given. They are extracts from a letter from the Directors of the Vaccine Institute of Lausanne to M Huon.

"Nous eûmes l'occasion de constater que si le 6000 vaccin d'origine équine marquait une virulence généralement supérieure à celle du vaccin de genisse, cette supériorité n'allait pas sans entraîner à sa suite des phénomènes d'intensité réactionnelle plutôt regrettables."

"Nous vons pu, par nos innombrables recherches bactériologiques, nous convaincre que la composition bactérienne de ces vaccins très actifs n'entrait nullement en cause de l'apparition de ces phénomènes généralisés mais que ceux-ci ne pouvaient être dues, qu'à l'énergie propre d'élément spécifique."

This is only a short preliminary note and I hope to be able to provide a more full and detailed paper in the near future. M Huon kindly supplied me with an ample supply of both A and M lymph, and this I have divided between Dr Turner, Health Officer, Bombay, Dr Crake, Health Officer, Calcutta, and Major Clemesha, I.M.S., Sanitary Commissioner for Bengal. The lymph was brought out in cold storage all the way from Marseilles. Of course, it should be clearly understood that an ordinary degenerated or attenuated calf vaccine is sufficient to experiment with. All that is required is passage through a horse, or, as will be

found, generally more cheap and practicable through an ass

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March April 1911

THE KERNELS OF *CANARIUM COMMUNE* AS AN ADDITION TO MILK IN INFANT FEEDING

BY DR W G BOORSMA

Pharmacological Laboratory, Jaffa

In tropical countries it is a very common occurrence that white women cannot nurse their babies themselves. As indigenous nurses generally cause almost intolerable trouble, it is necessary in these cases to look out for a proper substitute, and cow's milk is of course the first substitute to be taken into consideration.

Undiluted cow's milk however is imperfectly digested by a nurse child, its caseine coagulating in the stomach into big compact lumps, whereas human milk forms only light flakes. The fault may be corrected by diluting the cow's milk with a great quantity of water, but a mixture thus composed not being sufficiently nutritious, the child will suffer the stomach and yet be under nourished.

Evidently it will be better to dilute the milk with a liquid, which 1° prevents its curdling into big lumps, and 2° is by itself a good nourishment, acting in this way, we do not force the child to absorb too large quantities of food. Experience has taught me that this intention may be realised by making use of a properly prepared emulsion of the seed-kernels of *Canarium commune* L, a tree which is very common in tropical parts of Asia, and bears the Malay name of *kanari*. It is cultivated in Travancore, South India.

The fruit of *Canarium* has a soft outer shell and a hard triangular inner shell, comprising one or two seeds resembling almonds.

The seeds to be used must be ripe or nearly ripe, which can be judged from the solid consistence of the kernels, the brown colour of the seed coat and the black colour the fruit shell possesses or at least is about to assume. The seed-coat of unripe seeds is pale reddish or white, its contents being weak, watery and poor in oil.

To obtain the seeds, the soft part of the fruit wall is removed—which, especially after moistening with water, affords no difficulties—whereupon the hard inner shell is broken up by aid of a hammer or a stone.

In order to keep the fruits sound for a time, they ought to be thoroughly deprived of the outer shell, which otherwise would soon putrefy and grow mouldy. Thus treated, the fruits may safely be kept for a long time.

The chemical composition of ripe kernels was stated to be as follows—

Fresh	Dry	
21 3%	—	Water
59 5%	75 6%	Oil
11 44%	14 5%	Albuminous matter
1 1%	1 2%	Soluble Carbohydrate
0 3%	0 4%	Pentosan
0 9%	1 1%	Cellulose
3 21%	4 08%	Ashes
97 67%	96 88%	

By some experiments it was stated that, if the treatment is performed without special care, about 15—20% of the oil, 25—30% of the albumen and 20—30% of the ashes are retained. Now it is obvious that, with regard to the composition of the mixtures, we have only to reckon with the extracted portion of the constituents. So, for practical purposes, we may estimate the amount of albumen at $11\frac{44}{100} \times 0\frac{7}{10} = 8\%$, that of oil at $59\frac{5}{100} \times 0\frac{8}{10} = 50\%$.

Fresh ripe kernels, pounded with water, give, like almonds, an emulsion, wherein the oil is kept in suspension by the albumen. Such an emulsion, with milk sugar dissolved in it, is to be added to cow's milk.

To prepare the emulsion, firstly, the seed coats are to be removed—which may be easily done after soaking the seeds a short time in warm water, which should not be too hot,—after which the white kernels are washed with fresh water and, after adding the milk sugar, are very finely pounded and rubbed down into a paste-like mass. This mass is to be carefully mixed at first with little, afterwards with gradually increasing parts of the water. After being strained and squeezed through a piece of thin cotton—previously washed in boiling water,—the mass is rubbed and mixed with water in the same manner a second time and strained again, whereupon the treatment may be repeated a third time. The white emulsion is mixed with the cow's milk and the mixture is sterilised in a clean bottle by immersing it into water, which is kept boiling for ten minutes.

Of course the use of a Soxhlet apparatus is to be recommended, which enables us to sterilise the food for 24 hours all at once.

In the course of the day a thin oily layer will rise to the surface, but by shaking a little, it may be easily mixed with rest of the liquid, there remain only a few little flakes, which attach to the glass.

It is preferable, after sterilising, to remove the bottles from the hot water at once, and to keep them in a cool place, instead of allowing them to stay in the kettle and to be cooled slowly in the course of some hours. The sooner the mixture gets cool, the smaller the chance of its turning sour, in which case white lumps are formed in the liquid and the latter may not be used.

As to the proportion of the constituents of the mixture, there have been composed prescriptions for different ages of the child, viz., as follows—

For each 100 cc of mixture

I Up to the age of 1 month 25 cc of cow's milk and 75 cc of emulsion, prepared from 75 gr of kanari and 3 75 gr of milk-sugar,

II From 1—4 months 40 cc of cow's milk and 60 cc of emulsion, from 6 gr of kanari and 3 gr of milk-sugar,

III From 4—7 months 60 cc of cow's milk and 40 cc of emulsion, from 4 gr of kanari and 3 gr. of milk-sugar,

IV From 7—9 months 75 cc of cow's milk and 25 cc of emulsion, from 25 gr of kanari and 1 25 gr of milk-sugar,

In English weights and measures

For each pint of mixture

I Up to the age of 1 month 5 fl oz of cow's milk and 15 fl oz of emulsion, from 1 oz 3 dr of kanari and 5 1/2 dr of milk sugar,

II From 1—4 months 8 fl oz of cow's milk and 12 fl oz of emulsion, from 1 oz 1 dr of kanari and 4 1/2 dr of milk-sugar,

III From 4—7 months 12 fl oz of cow's milk and 8 fl oz of emulsion, from 6 dr of kanari and 3 dr of milk sugar,

IV From 7—9 months 15 fl oz of cow's milk and 5 fl oz of emulsion, from 4 dr of kanari and 2 dr of milk-sugar,

After the age of 9 months cow's milk is given without any addition. It is recommendable, not to perform the changing of proportions in one day, but gradually within some days. Should the new prescription appear not to agree quite well, the previous one should be continued for some time. There is no reason for any

As might be expected, the kanari-emulsion does not contain the whole of the nutritious substances of the kernels, part of them remaining in the expressed mass

anxiousness in such cases on account of the deviation from the figures given above, as it is easily to be understood that the development of one child cannot at every time keep pace with that of another. Upon the whole, those figures are not at all to be considered as a rule that does not allow any exception, but only as a guide to be used with judgment.

With the aid of the above given figures the constituents of the kernels, and accepting cow's milk to contain albumen 3.55, fat 3.69, milk sugar 4.88, ashes 9.71%, we state the composition of the mixtures I—IV to be about —

	Water	Albumen	Fat	Sugar	Ashes
I	88.47	1.49	4.67	4.97	0.40%
II	88.21	1.90	4.47	4.95	0.47,,
III	87.86	2.45	4.21	4.93	0.55,,
IV	87.61	2.87	4.91	4.91	0.60,,

The composition of human milk is known to be extremely variable. According to Koenig, 200 analyses afforded the following average —

Water	Casine	Albumine	Fat	Sugars	Ashes
87.41	1.03	1.26	3.78	6.21	0.31%
<u>2.29 %</u> Albuminous matter					

Comparing these numbers with those of our kanari-mixtures, we find that the latter have a surplus of fat, which is however balanced by a deficit of sugar. With the prescriptions I and II the amount of albuminous matter is inferior to that of the average for human milk. However, taking into account that this average is contributed to by the very high figures of the first few days after the birth, we may readily admit the amount of albumen to be quite sufficient on the whole, gradually increasing from I to IV, it forms a regular transition to that of undiluted cow's milk. Perhaps there might exist some fear on account of the relatively great quantities of fat the mixtures contain. Experience has abundantly proved however the kanari-fat to be perfectly and easily digested.

For the rest there may as well be administered mixtures of a somewhat different composition, containing fat to a smaller amount, f.i.

for each 100 cc

I 25 cc of cow's milk and .75 cc of emulsion, from 5 gr of kanari and 5 gr of milk-sugar,

II 40 cc of cow's milk and 60 cc of emulsion from 4 gr of kanari and 4 gr of milk sugar,

III 60 cc of cow's milk and 40 cc of emulsion, from 3 gr of kanari and 3 gr of milk sugar,

IV 75 cc of cow's milk and 25 cc of emulsion, from 2 gr. of kanari and 2 gr of milk sugar

Or in English weights and measures for each pint of mixture

I 5 fl oz of cow's milk and 15 fl oz of emulsion, from 7 5 dr of kanari and 7 5 dr of milk-sugar,

II 8 fl oz of cow's milk and 12 fl oz of emulsion, from 6 dr of kanari and 6 dr of milk-sugar,

III 12 fl oz of cow's milk and 8 fl oz of emulsion, from 4 5 dr of kanari and 4 5 dr of milk sugar,

IV 15 fl oz of cow's milk and 5 fl oz of emulsion, from 3 dr of kanari and 3 dr of milk sugar

It may be mentioned here that a part, or even the whole of the milk sugar may without objection be replaced by pure cane-sugar.

The kanari-mixtures have originally been used as an imitation of "Lahmann's vegetable Milch," a preparation from almonds and nuts, which enjoys a well-deserved good reputation.

Ever from the beginning the "kanari milk" has proved an excellent substitute for the natural food. Not only did sound children thrive on it most prosperously, but especially in the many, often very serious cases, where it was administered to weak babies, even to those who had fallen away to a quieting extent on account of their being unable to digest any other kind of nourishment, the kanari-

emulsions agreed perfectly with the little patients and caused a strikingly speedy recovery of the sick bowels and a regular, normal increase of weight.

It is now some 12 years ago that the favourable results obtained with the aid of this nourishment were for the first time recorded in Geneeskundig Tijdschrift voor Nederl. Indië (Dutch East Indian Medical Journal). Since that time the kanari-milk has come into practice more and more in Netherlands India, and it may be said that it has generally been approved by those who made use of it.

Some experiments were made in order to find an explanation for the obvious favourable influence of kanari emulsion on the digestibility of milk.

From a rennet bag of a calf the mucous membrane was scratched out and macerated with 500 cc of hydrochloric acid (1.2 per cent of HCl). Addition of 1 part of the liquid thus obtained to 30 parts of a kanari emulsion causes to separate in the upper portion of the liquid a white secretion, which does not solidify. Cow's milk on being treated in the same manner affords a secretion consisting of solid white lumps, which gradually sink to the bottom.

Two liquids were prepared I of cow's milk, diluted with half its volume of water, and II a mixture consisting of 2/3 of cow's milk and 1/3 of kanari emulsion (1.15, with 5 per cent of milk sugar), 80 cc of either liquid, additionally with 2.5 cc of the rennet fluid at 37°C, were held at this temperature in high glasses for some time. Both of them coagulated. I gave a tough mass with some watery liquid above it, II formed a flaky secretion in the upper layers of the mixture and beneath it a cohering coagulum, far looser and weaker however than that of I a glass stick, which in I could only be pushed unto the bottom with some effort, scarcely met with any resistance in II. After one or two hours the mass in I could only by strong shaking be divided into big, tough lumps, whereas the substance in II was easily separated by shaking into flaky fragments.

Under the microscope, by feeble magnification, the milk coagulum shows a dense material, consisting of very small globes, that of kanari-emulsion proves composed of much larger, not cohering globes in the coagulum of the mixture the dense mass from the milk is seen streaked here and there by series of kanari globes.

If good fresh milk were not available, kanari mixtures could be prepared with condensed milk. Condensed milk is made by evaporating milk either without any addition or with cane sugar. If a milk belonging to the former class is to be used, the indication for diluting the milk as prescribed on the label is simply to be followed up, whereupon the solution may be treated as mentioned for fresh cow's milk.

As to the condensed milk prepared by evaporating with cane sugar, there are several brands of different composition. In Java the products of the Anglo Saxon Condensed Milk Co and that of Nestle's Condensed Milk Co, are chiefly used, they do not differ much from each other. Diluted with water only, as is often done, they form a solution that contains either too much sugar or too much water for the purpose here in view. By making use of kanari kernels, the fault may be corrected in some degree, although the possible variety in the composition of the liquids is far less than in the case of fresh milk.

Only two mixtures are to be recommended I for the first 3 or 4 months, II for the time afterwards.

To be taken for each 100 cc

I 10 gr of cond milk and 7.5 gr of kanari,

II 12.5 gr of cond milk and 5 gr of kanari

Or for a pint

I 2 oz of cond milk and 1.5 oz of kanari,

II 2.5 oz of cond milk and 1 oz of kanari

The composition of this mixture

Water	Albumen	Fat	Sugar	Ashes
I 87.89	1.46	4.82	5.48	0.35%
II 87.50	1.48	3.84	6.25	0.33%

is at any case more favourable than that of aqueous solutions of condensed milk only and undoubtedly the kanan emulsion will, here too, exert its useful influence on the digestibility of the milk. I must acknowledge, however, that I have no experience about the application of condensed milk kanan mixtures.

THE USE AND ABUSE OF PESSARIES
A CLINICAL LECTURE

BY V. B. GREEN ARMYTAGE, M.D.,

CAPT., I.M.S.,

Resident Surgeon, Eden Hospital, Calcutta

DURING the last two and a half years many thousands of out patients have been seen by me at the Eden Hospital, and of these many had already undergone medical treatment elsewhere, and not a few of these—Indians as well as Europeans—sought hospital aid because they were martyrs either to the use or abuse of pessaries. For this reason I think it may be of some service if we consider to day a few points as to the proper use of pessaries, so that you may not abuse these useful adjuncts of treatment, as is so often done.

To enable us to understand the rationale of the use of pessaries, we must first consider the factors that maintain the uterus in position, at the pelvic floor as a whole. Then we shall understand the Genesis of Prolapse, and of Retroversion and Retroflexion.

The factors that keep the uterus in position are five, and in their order of importance may be classified thus—

- (a) The integrity of the fixed portion of the Pelvic Floor.
- (b) The integrity of the Connective tissue around the base of the Broad Ligament and Blood Vessels.
- (c) The intra abdominal pressure.
- (d) The size and weight of the uterus.
- (e) The ligaments of the uterus. These are comparatively unimportant, save the Uterine Sacral ligaments.

As you all know, the Pelvic Floor consists of a fixed posterior portion and a moveable anterior portion. The anterior portion comprises the retropubic fat, the bladder and urethra, the uterus and the walls of the vagina. The posterior portion comprises the levator ani, the fascia, the rectum and the perineal body.

The weak spot of this fixed portion is what is often called "the Pelvic Aperture," i.e., the opening lying between the two halves of the levator ani, and bounded by the pubo rectal fibres of that muscle.

Through this aperture pass the Urethral, Vaginal and Rectal tubes.

Now since the Perineal Body lies well below the pubo rectal fibres of the levator ani, rupture of the Perineum alone cannot increase the size of the Pelvic Aperture, nor give rise to prolapse. For this to occur we need in addition a stretching or rupture of the levator ani such as occurs in Labour. Of course the Connective tissue around the bases of the Broad Ligaments will become stretched and torn at the same time as the muscle.

Thus, if the repair be faulty or satisfactory involution does not occur, we shall have a bulging of the bladder into the vaginal canal,—Cystocele. Later this bulging will tend to pull on the anterior lip of the cervix uteri, and we shall have elongation of the supra vaginal portion of the cervix as the result of traction, and eventually the mechanical result will be Retroversion of the uterus.

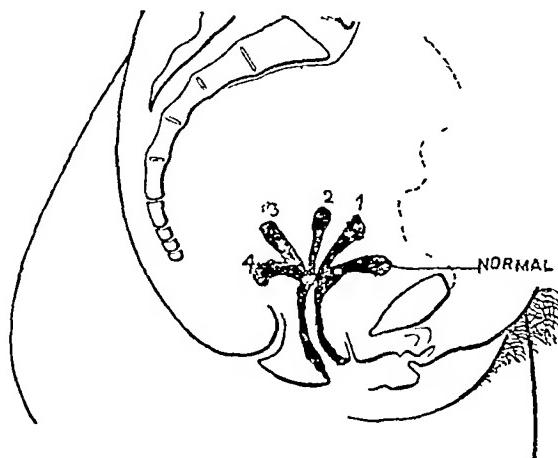
When once this condition has been brought about, the uterus whose long axis now lies in the line of the vagina,

will tend to pass down along the vagina, just as the bowel tends to pass down along the inguinal canal in an ordinary hernia. And as it descends the uterus will drag down the posterior vaginal wall, and finally become extruded at or even beyond the vulva.

I would here remind those of you who have seen such cases in the O.P. department, that sometimes virgins and nulliparae suffer from prolapse, this is probably due to congenital weakness of the pelvic diaphragm, and is therefore comparable to congenital hernia as we find it in the male.

Clinically we shall find it convenient to divide our cases of Retroversion into three categories, according to the degree of displacement present. *Vide diagram.*

In cases of the first degree, the long axis of the uterus lies just in front of that of the vagina (1 in diagram).



In cases of the second degree the uterine axis is continuous with that of the vagina (2), in those of the third degree it lies behind the vaginal axis (3), and in these cases retroflexion is often present as well (4).

Now let us consider the treatment of our cases of SLIGHT PROLAPSE. This will vary according as we see the patient soon after labour, or later. In cases seen soon after labour, the prolapse will be but slight, and all that we shall need to do, is—

- 1 To empty the bladder.
- 2 To replace the uterus in its normal position.
- 3 To keep it there by inserting a small Ring or Hodge pessary (which the patient will be able to discard after two or three weeks).

4 To brace up the patient by a course of tonics.

In some cases I may tell you that after you have replaced the uterus all that the patient requires is to undergo a course of Ichthyol glycerine plugs, and wear a firm T bandage.

When the case is slight and is seen late you will base your treatment on (1) the extent of laceration of the Perineum, and (2) the degree to which the uterus can be replaced.

1a If the laceration be extensive and the orifice of the vagina consequently large, operative measures rather than treatment by pessary should be advised.

1b If the vaginal orifice be of medium size, then a Ring pessary will be found most useful.

2 If the uterus is bound down by adhesions, and these do not yield to local treatment, no pessary can possibly be of use. You may think that this fact is self evident, but I can assure you that one often has found a pessary worn by a woman whose uterus is bound fast down in the pouch of Douglas.

Some of your cases of prolapse will come to you for "falling of the womb," others because they suffer from pelvic pain, or menorrhagia or metrorrhagia. You will find it a good plan to treat the latter for a few days or it may be a few weeks first by means of Ichthyol-glycerine plugs and daily hot douching before you attempt to reposition the uterus.

A uterus that has become subinvoluted or *retroverted after labour* is a very fruitful source of pelvic symptoms, and I would remind you to follow in your private practice the excellent rule of this hospital—"every woman must be examined after delivery as to the condition and position of the uterus before she is discharged."

If you omit to follow this rule be sure that you will some day bitterly regret the omission.

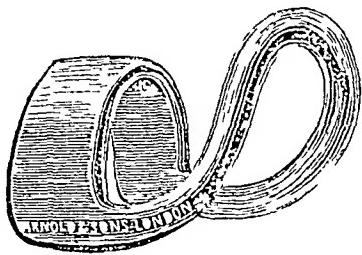
For prolapse of the *first degree* a Ring pessary is usually best.

For prolapse of the *second and third degrees* a pessary should only be used if the patient's health is not good or she is too old for operative treatment.

In such cases the capacity of the vagina will guide you in your choice of the pessary best suited to the case as to whether it should be a Zwancke, a Ring, a Cup, or a plain rubber Ball.

I shall not discuss the operative measures for the treatment of Prolapse of the 2nd and 3rd degrees, for you will have ample opportunity of seeing these carried out in this hospital, and of judging of their results.

In cases of Slight Prolapse, where Cystocele is the only cause of complaint, you may prescribe a Galabin's cradle pessary as a palliative.



In some cases of relaxation of the pelvic floor, you will find prolapse of the ovaries, and this may cause dyspareunia for such cases in this country I would advise you to use the ordinary Ring pessary, and to eschew the cushioned type of Hodge pessary.

You are aware that retroversion or retroflexion may be due to congenital and acquired conditions, and you know that they may exist without any degree of prolapse and may in some cases give rise to no symptoms whatever. Therefore if you should find either condition in a patient do not inform her of the condition of affairs unless she has real pain directly attributable to the condition, or is a married woman who has sought your aid for Sterility, or because of her having had one or more abortions.

However, should there be symptoms in both the congenital and acquired forms of malposition, they are more or less the same, namely, dragging pelvic pain and dysmenorrhoea, with, as I have indicated, sterility and a tendency to abortion.

But though the symptoms be similar, remember that treatment of the condition depends on its cause. You will often be able to recognise that a malposition is due to CONGENITAL causes by noting that the posterior vaginal wall is short while the uterus is small and lies in or behind the line of the vagina. It is difficult to correct the faulty position, and, when it has been replaced the uterus springs back at once, the so called "hair trigger uterus". In such a case the patient is either sterile, or if capable of impregnation has had one or more abortions.

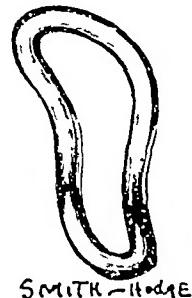
For this condition pessaries are absolutely useless and should never be prescribed.

If the patient has been long under treatment for dysmenorrhoea, or is married, or about to marry, you should propose dilatation and curettage of the uterus, followed by an operation based on Gilliam's plan.

The most frequent cause of the ACQUIRED form of retroversion or retroflexion is labour or abortion, in some cases the condition is due to pelvic peritonitis or to an accident.

In such a case the first thing to be done is to determine the position, size and mobility of the uterus.

If it is mobile it may be replaced by means of the fingers, or the vulsellum and sound. Having replaced it you, then have to choose the form of pessary suited to the case, and this depends on the size of vaginal orifice. If the orifice be small you will use a Smith Hodge *vide diagram*, if it be of medium size in ordinary Hodge, if it be large, a Ring pessary.



SMITH-HODGE

If you find that the uterus is fixed and painful you will prescribe a course of douches and plugs. At the termination of the course you will try to replace the uterus, and if you fail to restore it to its normal position, you will advise the patient to undergo operative treatment.

Here I would remind you that it is easy to repose a retroposed gravid uterus, and to keep it in place by means of a Hodge pessary, worn for a short time.

In conclusion, I would indicate a few principles for your guidance when you have to deal with a patient who presents herself for treatment by means of pessaries.

1 First pass a catheter it is useless to try to get the uterus into proper position while the bladder is full.

2 Grasp the anterior lip of the cervix with a vulsellum and pass a uterine sound. Pass two fingers into the vagina and while you are making pressure in the anterior or posterior cul de sac, with your other hand on the abdomen just above the pubes try to manipulate the uterus into position, if this fails then let your assistant make gentle traction on the vulsellum and at the same time manipulate the sound so that its point looks forward. Of course great care should be exercised in the use of the sound, if this be done this method of reposition will be found quite satisfactory. In some cases the sound is not necessary at all, the fingers and vulsellum being all that is required to do it. In others the fingers alone are sufficient, particularly if the patient is in the genu pectoral position.

3 Having replaced the uterus, insert the pessary. The length and breadth of the pessary suited to the case will have been determined by the fingers, during the replacement of the uterus. The depth of the vagina you estimate by the length of the finger required to reach the posterior cul de sac and the breadth of the vagina you gauge by separating the two fingers.

4 Having inserted the pessary chosen you determine whether it fits well, *viz.* —

(a) You will remember that the greatest concavity of the Hodge and Smith Hodge forms should *in situ* be directed forwards, and that the rounded end of the pessary should fit into the posterior cul de sac. That the posterior wall of the vagina should not be tense and that you should be able to pass the finger all round between the pessary and the vaginal walls.

(b) The pessary must not be too long. The anterior end of it should not reach to a point nearer than $\frac{1}{4}$ of an inch from the mouth of the Urethra.

(c) A pessary should not cause any pain. Ask the patient to come back to you in a few days if it should do so, when, if necessary, it can be changed.

5 As rubber is costly and moreover rapidly becomes foul and rotten, the pessary of choice should be one of vulcanite.

6 Before it is inserted the pessary should have been rendered aseptic, and you will tell the patient that she must use a vaginal douche daily, and that she must be seen at least once every three months while she continues to wear it

7 And lastly a word of warning Never insert a pessary if there be present any inflammatory condition of the vagina, uterus or adnexa

Never condemn a healthy patient to wear a pessary for a condition which can only be cured by operation Never prescribe a pessary for a virgin

NIGHT-BLINDNESS ITS CAUSES, SIGNS, SYMPTOMS AND TREATMENT

By P K CHITALE,

MAJOR, I M S,

Civil Surgeon, Damoh, C P

THIS affection of the eyes is pretty common in this district It goes under the name *Rat Andhera*

It is mostly seen among working classes and among those exposed to powerful sunlight Both males and females are susceptible Weak, ill-nourished and debilitated persons working in the fields during the hot season with bare heads are more liable to get it than other classes of people whose work is confined to their houses Persons who have suffered from malarial fever and who are weak and anaemic with enlarged spleens are often attacked with this disease Cases are also frequent among well-to-do classes leading a sedentary and indoor life such as Banias, cloth merchants, etc Some cases show distinctly scorbutic signs such as sponginess, bleeding from the gums and marked anaemia Persons passing slight albumen or sugar also are predisposed to this kind of blindness when exposed to powerful rays of the sun during the months of May and June Syphilitic persons in tertiary stage often come to the hospital for night-blindness, but as a rule they do not improve under Iodide or "Salvarsan" treatment Ophthalmoscopic examination in such cases reveals extensive retinitis with choroidal pigmentation and commencing optic atrophy Some cases appear to be due to disorders of liver such as congestion The disease sometimes occurs in epidemic form when several persons in one house get affected one after another It spreads rapidly from house to house and from one village to another Children appear to be less susceptible to this affection than adults

In sporadic form the affection occurs in many villages in this district from April to November Black-smiths, coolies in the bazar, porters at the railway station and workers under the sun are generally affected by this condition in Damoh Town from May to end of October every year Out of 400 cases observed by me 226 were anaemic and had enlarged spleens Seventy-two were due to scurvy, 36 suffered from general

debility, 22 syphilitic, 6 passed slight albumen in urine and 3 had sugar and 6 showed congested liver

In 1907 I noticed 65 cases of night-blindness during the month of May in one village This was a year of scarcity and inhabitants of that village were engaged in breaking *guttee* by the road side and on inquiry it was found that they used to eat bread made of old *jawar* and *kodo* flour In another village in the same year several cases occurred in one village among Banias These were well-to-do people and appeared well nourished, cases among them appeared to be due to deficiency of common salt in their daily diet At any rate their eyesight improved when advised to take sufficient amount of salt in the pulse and vegetables Some cases appeared to be due to bad wheat flour which was yellowish, gritty and was giving out a smell of fermentation

Twenty-three cases occurred in the Damoh Jail during the year 1909 and 1910 in June and July These were mostly weak and debilitated prisoners They were on *jawar* diet The grain looked all right but was probably old *Jawar* flour on examination was found darkish looking and smelt to some extent A change to wheat diet and issue of limes stopped the affection within two weeks Twelve cases occurred during 1910 among the police They were mostly debilitated people and had contracted the disease in the course of their district work In 1909 six cases occurred among firemen and four among railway drivers during the month of May Cases were probably due to excessive heat near the engine and high temperature In the same month 12 cases came under observation among black-smiths of Damoh Town These were probably due to exhaustion of retina due to constant exposure to fire and heat Seven cases developed "glaucoma" after three weeks of night-blindness

OPHTHALMOSCOPIC EXAMINATION

Retina and optic disc did not show any change. These were the cases who suffered from sudden attacks of night-blindness and who were in good health, in weak and debilitated persons papilla and retinal vessels were slightly congested, in Scorbutic cases retina sometimes showed small haemorrhages among the retinal vessels as well

In syphilitic cases the retina showed, besides signs of inflammation, small yellowish spots with slight pigmentary deposits among the blood vessels and round about In some cases pigment was more to the periphery and optic disc looked yellowish and retinal vessels thin These cases passed on to optic atrophy and patients became totally blind

Six cases had kidney disease. These patients after a month became totally blind and ophthalmoscopic examination showed greyish opacity of retina, with white spots round the disc. In one case signs of optic neuritis such as congested retinal vessels and blurring of the optic disc were present. Three cases suffered from diabetes. The Retina was more or less congested and the disc blurred.

Four cases that came to the hospital for treatment had signs of "glaucoma". Ophthalmoscopic examination revealed characteristic excavation of the papilla and arterial pulsation. These cases ended in complete blindness later on.

COURSE OF THE DISEASE

It begins suddenly and attacks one or more persons at one time. The disease lasts from two weeks to three months. Relapses among the working classes are common.

SIGNS AND SYMPTOMS OF SIMPLE NIGHT-BLINDNESS

Patients can see well during strong light but are unable to see distinctly in the morning and evening and become totally blind during night time. In simple night-blindness "conjunctivitis" is not present and there are also no signs of any congestion of retinal blood vessel.

Patients at first complain that they cannot see properly in the evening and the vision becomes gradually indistinct until they are unable to see anything except in strong light.

With the diminution of light the visual field also becomes narrow and so also acuteness of vision and colour perceptions. The pupils are as a rule dilated more or less and then the power of accommodation for near objects becomes weak. Then eyes cannot also follow the movements of the objects placed in the visual field properly. Both the eyes are mostly affected either simultaneously or after an interval of two or three days. In other cases which take longer time for the recovery of night-blindness some conjunctivitis is always present and patients often complain of headache and giddiness.

COURSE OF THE DISEASE

As the disease progresses the inflamed conjunctiva becomes dry and white spots are often observed on both the sides of the cornea near the margin covered with whitish discharge. These white spots remain visible for about a week and disappear with the dryness.

Acute cases generally come on suddenly and attack several persons simultaneously. The affection lasts from three weeks to three months in some cases, but all cases of pure night-blindness and not due to any other disease such as syphilis, kidney disease, etc., always show complete recovery in three or four months.

Treatment—In cases due to disordered liver, an initial purgative such as calomel is of great value. In malarial cases large doses of quinine taken morning and evening are useful. It is followed with bitter tonics combined with iron. In cases of scurvy the daily use of flesh lemons and green vegetables together with saline purgatives and tonic treatment help to restore the eye-sight. In specific cases large doses of Pot Iodide improve the eye-sight for a time, but patients become totally blind later on with the commencing optic atrophy.

Good results are also obtained by keeping persons in a dark room for a day or two and relapses are prevented by prescribing smoked glasses. In cases where conjunctivitis is present eserine drops instilled in the eye twice a day improve the eye-sight.

Local treatment—Castor oil drops keep the eyes cool and soft. Sensation of dryness is relieved by frequent washing with tepid water mixed in boiled cow's milk. Glycerine and soda mixture 1 in 20 is also comfortable and improves the eye-sight. Pouring cold water over the head morning and evening helps to reduce the sensation of dryness and headache is often relieved by rubbing over the head neem oil mixed with camphor. Internally small doses of Pulvis Ipecac are useful, 30 grains of goat's liver given twice a day with flesh limes improves the vision within a few days.

HOW TO KEEP FLIES OFF EDIBLE ARTICLES FOR SALE

By C. C. MURISON, M.R.C.S.E., D.P.H., D.T.M.,
MAJOR, I.M.S.,
Superintendent of Mathean.

Most important Municipalities and Cantons in India owing to the domestic and canyon fly nuisance have at one time or another considered the important question of making their market or markets "fly proof" and some of them have even gone to the great expense of having had gauze shutters applied to the doors and windows and over other ventilators.

In these so-called "fly-proof" markets owing to a constant stream of people going in and out the gauze doors have been kept more open than shut, with the result that in certain seasons the flies by the hundreds have found their way into the market, and there they have not only multiplied by the thousands, but perhaps have also infected each other and the food supplies with germs of disease. A very big percentage of these flies owing to the gauze shutters over the doors, windows and ventilators have been unable to get out of the market, and the ultimate result

*For use of Liver, see I.M.G., Vol XXXV (1900—p 424)—ED.

is that the number of flies inside the market is as bad as if the market had not been made so-called "fly-proof".

In spite of good sanitation, it is astonishing how flies during certain months appear by the millions, and the question arises as to how to keep them off the edible articles for sale?

The following method, although not perfect, will greatly help in keeping flies off —

Supply each vendor with a "fly-proof" safe

A certain number of flies are bound to get into the safe at the time of taking out or putting back articles, but the vendor should be held responsible for keeping the inside of the safe free of flies. If any flies get in, then he should drive them out by vigorously waving a duster. By this method the chances of flies infecting food stuffs will be reduced to a minimum. The size and shape of the "fly-proof" safe will vary for each kind of article for sale, but the general principle of construction is the same for all articles.

The description of the following two "fly-proof" safes will give an idea of the kind of safe required for other articles.

Sweetmeats — The Indian confectioner exhibits his sweets for sale on a tier-stand as shown in black in the diagram. The wire gauze netting should be placed in front, on the two sides and at the back of each tier as shown in red in the diagram. There should be one or more doors above the sweets and they could be of glass or wire gauze netting. The glass is preferable in dusty dark places, while the netting in all other places. The inside of the tier-stand should be painted white so as to reflect the light falling on it and thus enable the sweets to be more readily seen from the outside.

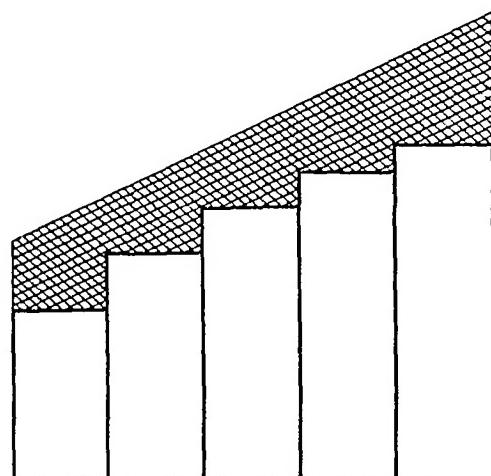
Mutton — The safe for mutton is an enlarged ordinary meat safe (doolie) without the central shelf or shelves. The size of it depends on the number of carcasses that will have to be kept in it, but a minimum floor space of 5 to 6 square feet should be allowed for each carcass.

It is advisable for the butcher to do the cutting and weighing of the meat inside the safe and for this he must be given extra floor space of about 12 square feet. If he does these outside, then he must be given this extra space in front of the safe and he should also be supplied with a large "fly-proof" gauze meat cover to enable him to cover up all the pieces of meat outside the safe which he is not cutting or weighing.

The height of the safe to be at least 8 feet.

The roof to be either of wood or iron wire gauze netting. The former is preferable in a dusty place. In addition, there should be a sufficient number of hooks slung on iron girders for hanging the meat.

All the four sides of the safe should have "fly-proof" iron wire gauze netting, but if the market is dark then the whole of the front side of the safe, including the door, should have large panes of glass fitted in to enable the public to more easily see the meat. The door should be so constructed that the whole or only the part of it can be opened as required. With a view of saving expense and space contiguous safes could be separated by only one sheet of wire gauze netting. The floor of the safe and the space in



front of it should be continuous and of the same level and be of some hard impervious material with a white polished surface, such as marble or Menton tiles which will not only be easily cleaned but will also reflect up the light and thus enable the meat inside the safe to be more easily seen from outside. The safe and the space in front of it should be on a plinth at least 3 feet high so as to prevent the public from entering the stall. The safe should be firmly fixed into the plinth.

The iron wire gauze netting necessary for the safes is wire No. 28 with eleven meshes to the inch, as recommended by Captain W. D. H. Stevenson, I.M.S.

A Mirror of Hospital Practice.

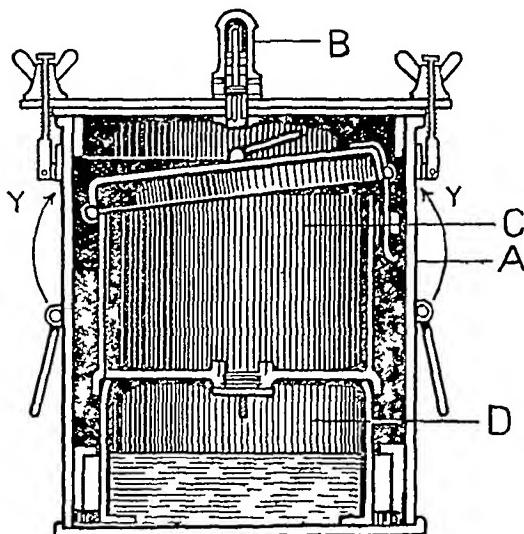
A PORTABLE HIGH PRESSURE STERILIZER

BY E A R NEWMAN, M.D.,
LT COL, I.M.S.,
Civil Surgeon Alipore

In continuation of the article on "The Choice of a Sterilizer" in the *I.M.G.* for November, the portable dressing sterilizer therein described can now be obtained from Messrs Incell & Silk, Calcutta. As some slight modifications have been

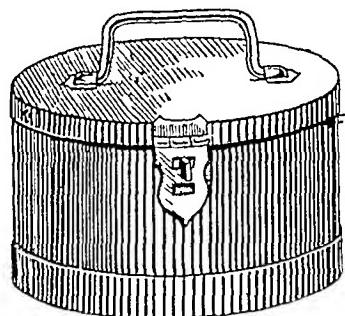
made in the design with a view to increasing its utility, a more detailed description may be of interest.

The apparatus consists of a stout copper can A, or receptacle for water, 9 inches in diameter by 9 inches in depth, its detachable lid is secured by five brass hinged screw-bolts. In the centre of this is placed the automatic steam valve



The Sterilizer

enclosed by a brass dome B, which also serves as a handle. The valve is of simple construction and only emits steam when a pressure of $2\frac{1}{2}$ lb in excess of the atmospheric pressure is reached. The temperature of the steam is consequently 221° F. The kettle C, or receptacle for dressings, measures 8 inches in diameter by 4 inches in depth internally. The orifice in its floor is ordinarily kept closed with a screwed plug, which



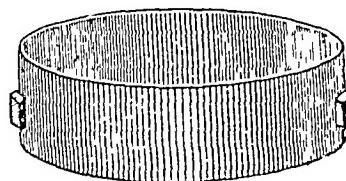
C—Kettle

is removed before sterilization. The hasp is so arranged that the lid can be set ajar during sterilization. The kettle is supported when placed inside the outer can on a zinc stand D.

Directions for use—Pour $2\frac{1}{2}$ pints of water into the can A, with the stand D, previously placed in position. Fill the kettle C with the materials to be sterilized. Set the lid ajar and

remove the screwed plug. Place the kettle in position on its stand D, and put the screwed plug on the top. Before putting on the lid spread a circular piece of lint or cottonwool over the kettle, to catch any drops of water that may condense on the inside of the lid. Close the lid by gradually tightening the screw-bolts in turn. Place the apparatus on a Primus stove or fire. Remove it from the stove, when steam has escaped freely for 10 to 12 minutes. Open the can A, and remove the kettle C. Close the lid and screw the plug into the orifice in the floor. Sterilized dressings can thus be kept indefinitely in an aseptic condition, for use at any time.

Remarks—The sterilizer is strongly constructed of copper, brass and zinc only, there is consequently nothing to rust. It requires no skilled knowledge to work it, or special attention in use. It is entirely automatic in action and when it has once been placed on the stove, it only needs removal after the prescribed lapse of time. The valve contains no spring to rust or weaken with use, and is so simple as to be "foolproof". Though the valve should not ordinarily be touched, should it at any time seem desirable to clean it, the domed cover B can be unscrewed and the valve lifted out and replaced without



D—Stand

difficulty. The wide and comparatively shallow kettle will be found to be much more convenient in use than one of a deeper or narrower pattern. The hinged lid renders access to its contents as easy as possible, the absence of registering slots and the flange to the lid ensure its dust-proof qualities. A canvass cover confers further protection, when it is carried about in private use. The cost of the whole apparatus does not exceed Rs 75.

I think I can claim that at this price, it is an advance on any other pattern of portable sterilizer now obtainable, both in simplicity and general convenience, and on account of the enhanced steam pressure at which it works in rapidity of action and reliability also. It has been designed as the outcome of practical experience, with the special view of meeting the exigencies of general practice and the requirements of small hospitals and outdoor dispensaries too.

In conclusion I must express my indebtedness to Messrs Incell & Silk for the way in which

they have carried out my suggestions, and for the excellent workmanship they have put into the construction of the whole apparatus

A CASE OF SALVARSAN POISONING

BY K G PANDALAI, M.B.,

LIEUT., I.M.S.

TREATMENT by Salvarsan for various haemoparasitic diseases is, by no means, in the experimental stage, yet even to-day it is not rare to meet with cases in which such treatment is boldly persisted in and injurious after-effects directly attributable to it have been produced which are no less serious than the possible effects of the malady itself. It is true that in great many instances, for example, in the treatment of the Secondary and later manifestations of syphilis and of yaws, the immediate result of the intravenous injection of Salvarsan is of such a spectacular nature as to impress one with its specificity, but in very few cases indeed could such a belief be continued for any length of time. I have noticed that in the majority of cases, either repeated and refractory recurrences have followed, dashing to the ground the fervent hopes of the most optimistic experimenter, or such disastrous consequences have resulted which might well make the physician feel something not unlike repentance.

The above general statements apply with equal force to Salvarsan in the treatment of malaria, an instance of which has recently come within my experience. I append a few notes on the case which may be of interest —

Sepoy R S, age 30, of the — Punjabis, was admitted to hospital in January 1913 with remittent pyrexia which was suspected to be malaria. Microscopic examination of the blood confirmed this belief and crescents of malignant tertian malarial parasite were discovered in large numbers. Believing in the potency of Salvarsan against all haemo-parasites, including the malarial parasite, the medical officer in attendance injected early in February 0.4 gramme of Salvarsan intravenously. The general reaction which followed this injection was serious and among the symptoms and signs the patient had were the following — Severe jaundice, vomiting and enlargement of the liver, rise of temperature to 103° F, anorexia and prostration. In a few days wasting and symptoms of polyneuritis, most marked in the arms and legs, manifested themselves. The patient gradually recovered, the enlargement of the liver subsided, general condition improved and in from 2 to 3 weeks he

had recovered so far as to be able to walk about, but pain and weakness of the legs still lingered, and it was considered desirable to send him home on sick leave for six months.

He returned from leave in September with the following symptoms — Sensations of pains and needles in both legs, slight wasting of thigh muscles, pain on pressure in the calf muscles, excessive sweating in the palms and soles, partial anaesthesia in the soles and when walking a feeling as if treading on cotton wool, gait unsteady and wavering, pupil reflexes normal and general condition good.

He was kept under tonic treatment for 8 months carefully avoiding arsenic, but very little improvement resulted in the symptoms of peripheral neuritis. He was in due course brought before a medical board and invalided as unfit for further service.

I must not omit to mention that notwithstanding the disastrous sequelæ arising from the treatment adopted, the patient had no further recurrence of his original malarial trouble throughout the three months he was under my observation after his return from leave. This freedom from subsequent attacks of malaria may reasonably be attributed to Salvarsan treatment in the first instance, and it is probable that the malarial parasites in his blood have been entirely eradicated, although it may be said that it is yet too early to confidently make such a statement.

CASE OF TRANSIENT HEMIPLEGIA

BY LAWRENCE FINK, M.B.,

Civil Surgeon, Burma

At about 8 P.M. on 22nd August 1912, Maung Po Myit, Burman prisoner in the Myaungmya Central Jail, was found in an unconscious state in one of the dormitories. I saw him shortly after and found him deeply comatose, pupils equal, but somewhat dilated and did not respond to light. He was 51 years of age with a history of syphilis contracted 25 years ago. His health in the jail was good, he had behaved well and was a convict warden. There was no head injury and no history of epilepsy, convulsions or blood infection. He was admitted to jail on 5th November 1910 and his release was due on 24th August 1912, having only one day more to put in jail. The convict night watch on duty reported that Po Myit appeared to be in good health when he lay down, that a few minutes later he merely complained of feeling giddy and soon after became unconscious. He could not then be roused and remained unconscious for 4 hours. When consciousness returned he was

found to be paralysed in his left arm and upper extremities. There was no aphasia and no deviation of eyes or tongue. His bowels were freely opened with castor oil and he was put on 20 grain doses of pot Iodide thrice daily. On 24th August, the day of his release from jail, he was conveyed to the Civil Hospital, where the iodide treatment was continued. The next day he was able to lift both his arm and leg and the following morning his limbs were as strong as those on the unaffected side. There was no albumen or sugar in his urine at any time since the onset of the hemiplegia, but his radial arteries appeared somewhat atheromatous, slow full pulse, no cardiac murmur. The three most common causes of hemiplegia are rupture of some cerebral vessel, thrombosis and embolism. The differential diagnosis of these conditions is given in text-books, but there is very scanty information on the subject of the duration of the hemiplegia. In Green's *Encyclopædia of Medicine and Surgery* it is stated that in cases of haemorrhagic hemiplegia the prognosis as regards life is good after the first fortnight and a certain degree of recovery can always be predicted, that in cases of thrombosis due to syphilitic arteroma recovery is slow and is never complete, that if the thrombosis occurs in vessels, the seat of syphilitic endarteritis or from blood states, such as are met with either during pregnancy or the puerperium, complete recovery is not to be looked for, that in cases of embolic hemiplegia the writer has known a patient three days after an attack to have recovered and have another attack from which recovery was only partial, and in many cases the recovery is but slight and a condition of considerable paralysis remains permanently. In the *British Medical Journal*, January 27, 1912, Dr Hugh Gillies describes two cases of transient hemiplegia following parturition and considers that in both cases the cause was neither an apoplexy nor an embolism, because of the complete restoration of function, nor were they due to uremia as there was an absence of albumen and all other signs of kidney trouble. He considers that both cases were caused by a spasmotic contraction of the cerebral arteries—an angospasm—such as is known to occur in migraine.

In the *British Medical Journal Epitome*, September 21st, 1912, page 38, there is a reference to a case of hemiplegia which followed an operation for empyema. In this case the writer says the suggestion of embolism is rendered improbable both by the rapid recovery and by the absence of any cardiac lesion.

In view of the scanty information available on the subject the case now reported is interesting. There was no sign of cardiac, renal or other disease and no albumen in the urine and hence embolism and uremia are improbable, and the speedy recovery from hemiplegia after some hours

of complete coma are also against apoplexy and thrombosis.

Since writing the above notes I have read Dr William Osler's very interesting and instructive address on "High blood pressure" in the *British Medical Journal*, November 2nd 1912, page 1173, and also his article on "Transient Aphasia and Paralyses in states of high blood pressure and arterio-sclerosis," *Canadian Medical Journal*, October 1912, page 919. The latter publication is referred to in a recent number of the *Medical Review*, and it is stated that in the First Edition of Osler's text-book, 1892, he said "Transient hemiplegia, mono-plegia or aphasia may occur in advanced arterio-sclerosis. Recovery may be perfect. It is difficult to say upon what these attacks depend. Spasm of the arteries has been suggested, but the condition of the smaller arteries is not very favourable to this view." At the meeting of the association of American physicians in 1891, it is stated that Dr George Peabody described the case of a man aged 56, with well marked arterio-sclerosis, who had an attack of transient hemiplegia without loss of consciousness. Then in the course of 10 days he had 4 or 5 attacks in which he lost speech and had incomplete paralysis of the right side. He died in a severe attack in which he had complete right hemiplegia with unconsciousness. Extensive arterio-sclerosis was found in the cerebral vessels, but there was no local lesion, no areas of special oedema, or any foci of haemorrhage or softening. Peabody seems to have been the first to offer a reasonable explanation of such cases. He suggested that there might have been in his case spasmotic contraction of the muscular coat of the middle cerebral artery or of several of its branches, causing temporary ischaemia of important brain centres. He urged that as spasm could be seen in the retinal vessels, with transient loss of vision, the same probably occurred in vascular areas in the brain causing ischaemia and loss of function.

Sir William Osler has seen a score or more cases which fall into three categories:

(1) Healthy persons simply with high blood pressure, but without signs of cardio-vascular disease. This condition he speaks of as hypertension. Only three cases were seen.

(2) Cases of well marked arterio-sclerosis in which cerebral attacks occurred without warning, sometimes as the signal symptom. A majority of the cases were in this group.

(3) Cases of advanced sclerosis with cerebral changes, manifested by progressive mental and muscular weakness, all possible types of these transient seizures, including convulsions, may occur. The attacks are most frequent in the aged, but also occur in the 5th and 6th decades.

Indian Medical Gazette

FEBRUARY

THE SCHOOL OF TROPICAL MEDICINE OF INDIA AT CALCUTTA

WE are glad to be able to announce that the construction of the School of Tropical Medicine laboratories has been commenced and that His Excellency Lord Cairnhill has kindly consented to lay the foundation stone on Tuesday, February 24th at 4-15 P.M. We now publish on another page an appeal for liberal endowments to enable several additional whole-time investigators to be employed, so as to make full use of the accommodation to be provided in the research laboratory, and also for a sum of two and-a-half lakhs to enable a small hospital for tropical diseases to be constructed, as an integral part of the new school, on a site already arranged for immediately to the south of the laboratories. This hospital will be of equal value to the teaching and research work, and will enable the Institution to be largely modelled on the lines of the Rockefeller Institute of New York, where such valuable work is being done under Professor Flexner.

We gave an account of the progress of the scheme in our August issue, but in the brief time which has since elapsed a serious crisis in the history of the undertaking has been safely passed through. After orders had actually been issued to commence the building, the plans were entirely upset by the Improvement Trust demanding over one-third of the site for the extension southward of Halliday Street and for widening it 40 feet, entirely through the site of the school, to form part of the new central road of Calcutta. Although a considerable portion of the essential north-lighted front thus lost will eventually be regained by closing Medical College Street and moving the morgue, entirely new plans had to be made and the building converted from a two-storied one, with foundations for a third, to a three-storied one with arrangements for adding a fourth later. Thanks to the devoted labours of Mr H. A. Crouch, Consulting Architect, Bengal, and of the P.W.D., the new plans and estimates have been prepared in an extremely short time, and the building is promised ready for opening on November 1st 1914, as originally arranged.

We are now able to give the plans of Mr Crouch's admirable design, with the following brief description. The site is immediately to the west of the present pathological laboratories of the Medical College, with a north-lighted front 114 feet, which will eventually be extended another 60 feet to the east. The entrance will be situated in the new 100-feet central road to the west of the building, which will lead into the hall and the central stair-case placed to the south of the north wing, whose rooms are all entered from a wide verandah and accommodate the biological laboratory of the Medical College. To the south of the entrance hall there are two large rooms 40 feet by 19½ for bio-chemistry and experimental pharmacology, respectively. The first floor contains the teaching portion of the School of Tropical Medicine in a compact and convenient manner. In the centre of the north wing is placed the practical class-room for microscopical teaching, with 56 seats, which can be further increased if it should become necessary at some future time. To the west is a general pathology and bacteriology research room 44½ feet long with three large north windows, to accommodate two or three workers and in which the post-graduates will be encouraged to learn research methods by working out their cases by means of bacteriological and blood examinations. Similarly, on the east of the class-room is a protozoology laboratory, while a smaller working room and office for the Director completes this suite of rooms. To the south of the hall and stairs is the lecture theatre, which can be darkened rapidly, and is arranged for the use of an epidiascope and of a cinematograph, in addition to the usual blackboard and diagram screen.

The second floor provides a large room for the library over the lecture theatre, while the north-lighted wing is entirely devoted to research laboratories, including four separate working rooms. One of these will be kept permanently at a temperature not exceeding 70° F. all the year round for the use of gelatine media, the culture of kala-azar parasites and serum preparation. A large sterilising room for preparing culture media, a small room for animals under experiment and a cold storage chamber, to be kept below freezing point, complete the arrangements. The out-buildings will contain several animal houses, including stables for serum animals, and servants' quarters.

The north elevation shows the extensive suite of rooms for microscopical work, while an interesting feature of the east elevation is the provision for a roll of honor of the names of past and future distinguished medical investigators.

We do not think it is necessary to add anything to commend such a greatly needed Institution to the very liberal support of the whole of India, and far beyond.

THE I M S IN 1913

THE year 1913 is a notable one inasmuch as it marks a change in policy as regards the civil side of the I M S. For four years previously the growth of the Service had been at a standstill, and a feeling of great uneasiness regarding the future had spread not only among I M S officers, but in the schools at home. The confidence of the schools has not been restored, it is much easier to check recruiting than to revive it. But the experience of 1913 should show that the Service is not stationary, far less shrinking, and that the corner has at last been turned. Actually 8 new civil appointments have been created, *viz.*, the Professorship of Pathology at the Grant Medical College, one more officer in the Bacteriological Department, bringing the total up to 12, three Deputy Sanitary Commissionerships in Bengal, Burma and the N-W Frontier Province, the Health Officership, Delhi City, the Consular Surgeoncy at Mohammerah and the Civil Surgeoncy at Sibi. On the military side one whole-time appointment has been created, *viz.*, the medical charge of the 42nd Deoli regiment which was formerly a collateral one. These additions to the establishment are likely to be followed by others.

As regards the Service generally, a new Royal Warrant was published in May 1913. Its most important feature is the abrogation of the old rule that promotion of Captains to Major and of Majors to Lieutenant-Colonel depended solely on length of service. The promotion of an I M S officer now depends also on his being considered fitted for advancement, and the innovation cannot be regarded as one which prejudices the prospects of an officer. The privilege of extension of service to complete 30 years is now withdrawn

from all who joined after 1st April 1911, thus removing one of the causes of block in the senior ranks.

In the Lieutenants' examination the subject of military organisation, administration and equipment has been introduced, and an officer can now go up after completing 12 months instead of 18 months' service. The office of the D-G, I M S, has been enlarged by the addition of an officer, and the names of the appointments have been altered. The Secretary has become the Deputy D-G, the Statistical officer is now Asst D-G (Sanitary), and the new officer is Asst D-G (Stores).

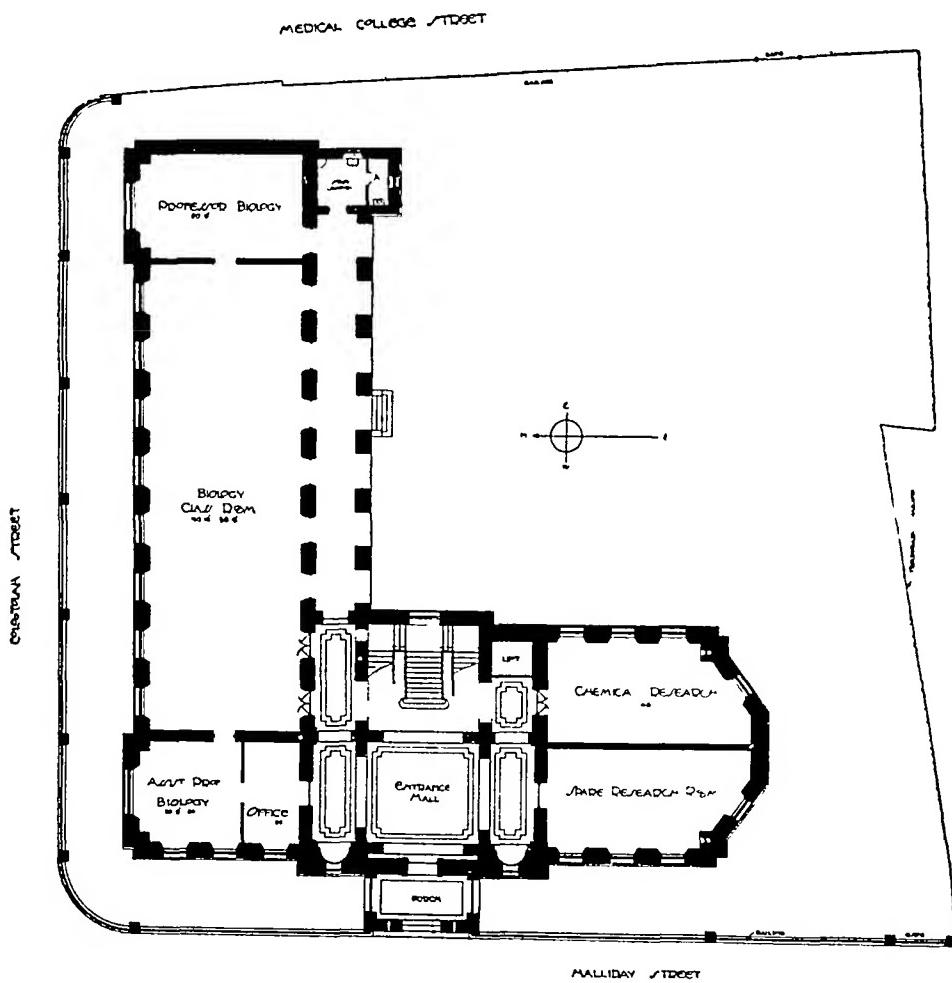
The concession of December 1910 allowing officers to reckon study for accelerated promotion up to the end of the 16th year of service is now in full operation, and many officers have been enabled to regain their original positions in their batches. On the military side it has been found necessary to limit the total period of leave to one year in the first instance.*

No orders have yet been passed on the recommendations of the Committee of 1910 regarding the adoption of a Station Hospital system, but the reorganisation of field equipment has been carried out as part of the recently sanctioned increase of the Army Bearer Corps, it has been decided that the S M O, I M S, in each station is responsible for the training of the detachment under his orders. The Secretary of State has recently announced that a limited number of officers may be attached to the staff in the United Kingdom while at home on leave, for instruction.

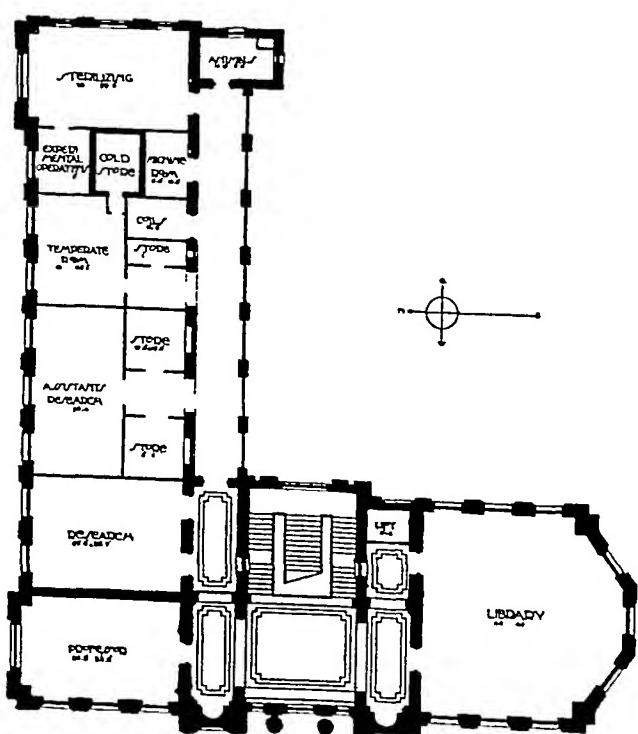
It has been decided that courses of instruction at the Central Research and Pasteur Institutes, and other Bacteriological laboratories, the Malaria and X-ray Institutes and Enteric Depôts are "authorised courses" for the purpose of free passage (A R I X, 50). Changes in the civil side of the service have not been numerous. The most important is that contained in Home Department Resolution 223-244 of 8th May 1913, fixing a probationary period of 2 years in civil and defining the circumstances in which an officer may be sent back to military employ.

* For the 2 years' leave limit, see Current Topics below page 63 —ED

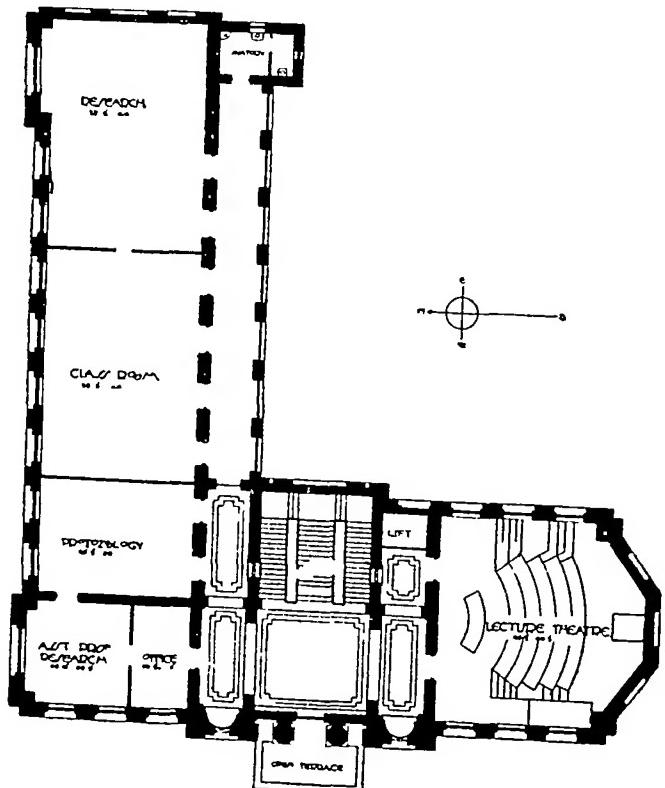
AN APPEAL FOR LIBERAL ENDOWMENTS FOR THE SCHOOL OF
TROPICAL MEDICINE OF INDIA AND RESEARCH
LABORATORIES, CALCUTTA



GROUND FLOOR PLAN

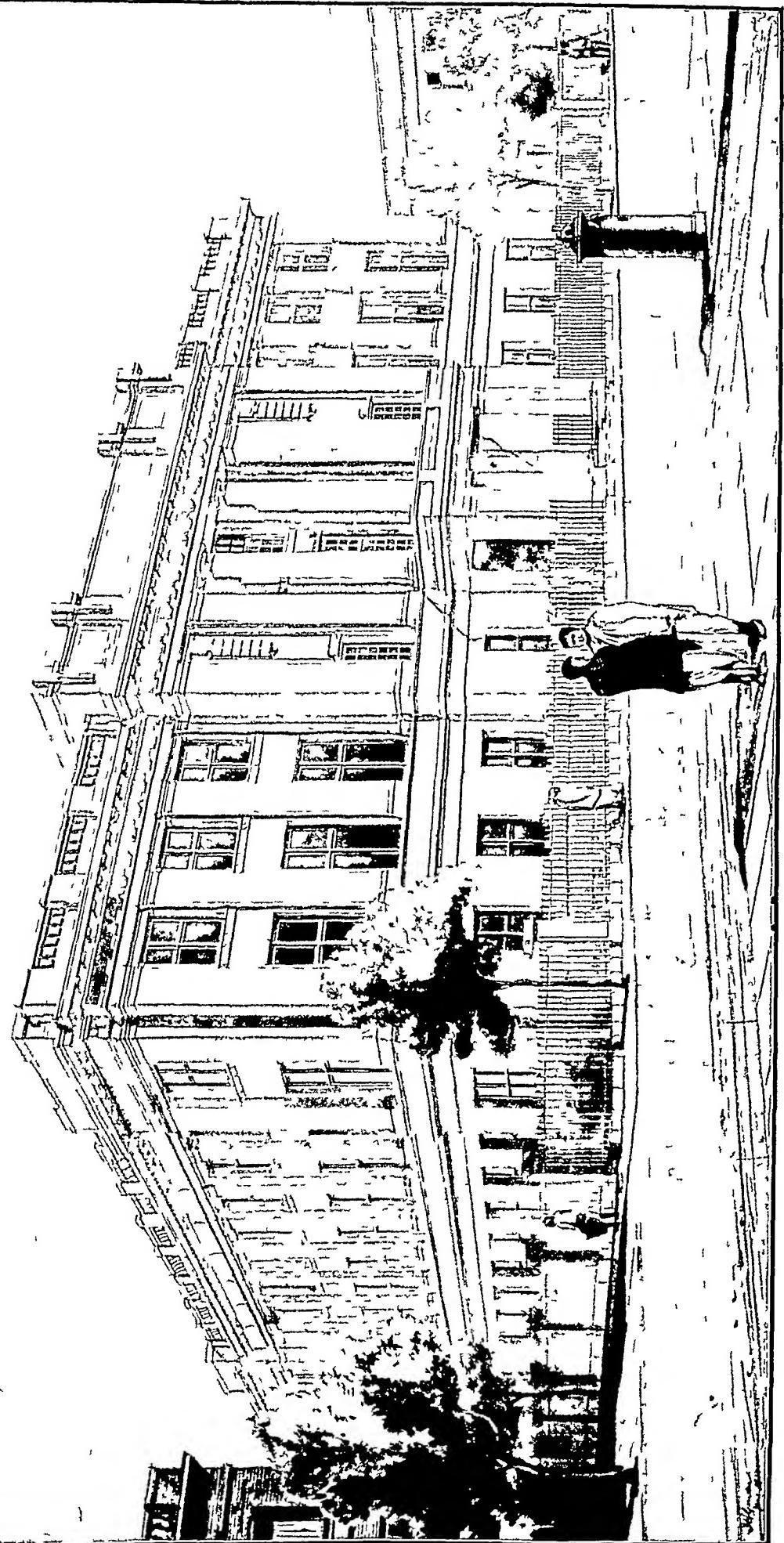


FIRST FLOOR PLAN



SECOND FLOOR PLAN

THE SCHOOL OF TROPICAL MEDICINE, CALCUTTA



Current Topics

STUDY LEAVE

ATTENTION is drawn to an important modification of the Study Leave Rules, as far as officers in civil employ are concerned.

Hitherto it has been held that the limit of two years total absence from India permissible under Civil Service Regulations is exclusive of any study leave taken, and a reference to the Army List will show that several officers are on combined privilege leave, furlough and study leave for a longer period than two years. This means, of course, a greater block in the matter of furlough in the provinces concerned.

The Secretary of State has now decided that the two years' limit is to include such study leave as may be taken. The new order runs as follows —

"Extract paragraph 30 of a Military Despatch from the Most Honble the Secretary of State for India, No. 120, dated the 21st November 1913 (Received the 7th December 1913)

30 Having considered in Council your Army Department Despatch No. 94, dated 24th July 1913, I approve the substitution of the following clause for the last sentence of paragraph 6 of the Study Leave Rules —

"The total period of absence from duty in India in the case of officers under the Leave Rules of 1886 for the Indian Army or under the Civil Leave Rules will be strictly limited to two years, subject to the following provisos —

"(a) In the case of officers under the Leave Rules of 1886 for the Indian Army, no leave (including study leave combined with other leave) in excess of one year may be granted in the first instance, and

"(b) In the case of officers under the Civil Leave Rules, the leave granted may be extended up to a maximum of three years on medical certificate."

The rule proposed by Your Excellency's Government has been amended so as to safeguard the right of an officer under Civil Leave Rules to a third year of leave on medical certificate under Article 312 (a) of the Civil Service Regulations

CRAWFORD'S HISTORY OF THE INDIAN MEDICAL SERVICE

THIS long looked for History is now announced for publication and in order to let our readers see what a store of information and how much it concerns them, we cannot do better than very briefly to point out the contents of the various chapters from early proofs kindly sent by the author, who has on so many occasions enriched our columns by numerous contributions on the history of the Service.

The first chapter deals with the early days of the history of Europeans in India from the days when three small vessels under a charter from the great Queen Bess sailed in 1591 and two of them survived to visit Ceylon and Nicobar.

The East Indian Company or Association of Merchant Adventurers received their charter from Queen Elizabeth on 31st December 1600, so it may be said to have come into existence on the

first day of the 17th Century. The first of the Company's ships sailed in December 1600 and on each ship were appointed "Surgeons twoe," some of their names survive, e.g., Ralph Salter of the *Red Dragon*, James Lovering of the *Hector*, Christopher Newchurch of the *Ascension* and John Gammon of the *Susan*. These Surgeons, if we except the names of those who went on the previous unsuccessful voyage of 1582, are the first European medical men of the Company's Service.

The names of European medical men, however, are also found in the employment of various Indian and Eastern Rulers, e.g., George Strachan in 1615-18, the more celebrated F. Bernier, who reached Surat in 1658, N. Manocci, a Venetian, who with Lord Bellamont reached Delhi in 1655, and many other less known names. Crawford's third chapter is largely devoted to the career of Surgeon-General John Woodall, who was appointed to the East Indian Company in 1614 and whose business it was to provide competent Surgeons and to fit up their medicine chests properly. Woodall got into trouble later and was succeeded by Henry Boone.

Lieut.-Col. Crawford then describes the early adventures of the Company's servants in the East Indies, i.e., Burmese, Malaya, Siam and further East.

In a previous issue of the *Indian Medical Gazette* Lieut.-Col. Crawford has fully told the tale of Gabriel Boughton. The story as told by most historians is largely legendary and incorrect, but undoubtedly Boughton did obtain a *farman* in favour of the Company from Shah Shuja. Another well-known medical officer was John Fife, and a full account of his life is given.

The early history of Madras and Bombay is given with many interesting details of the life and the men of that day.

Chapter VIII deals with the early history of Bengal and the Bay and "the mid-day halt" of Charnock, which was the beginning of the great city of Calcutta (24 August, 1690). The next chapter deals with the well-known story of the services of William Hamilton and the famous Embassy to Delhi. William Hamilton "of all medical officers who have served in India, the most famous and certainly the greatest benefactor of his country."

Passing over the history of the first half of the 18th Century, and the new long lists of Surgeons employed at Fort St. David, Bombay, Madras and Calcutta, we come to chapter XI, which deals with the great services of John Zephaniah Hollwell, medical officer, Mayor of Calcutta and for some time Governor of Bengal, who in 1756 was 8th on the Council at Fort William, and was the man whom all trusted during the black days of June 1756, when others in power fled to the ships. There were at least six other medical officers in Calcutta at that fatal time.

Another well-known bit of history is the story of the Patna massacre and splendid combatant work done by Dr Wm Fullarton, Surgeon to the Agency, the only surviving European officer.

The next chapter deals with the foundation of the Indian Medical Service as a graded Service or Establishment. We have already published the order which founded the Service with effect from 1st January 1764, one hundred and fifty years ago, and it is worthy of note that even then the establishment, small as it was, was divided into Civil and Military.

The next chapter traces the growth of the Service—as factories increased and as more regiments of sepoys were entertained, Lt-Col Crawford shows the strength of the Service at many periods, e.g., in 1785 we note a total of 234, in 1836 Dr F Corbyn gave the total strength as 745. In 1854 the Bengal Medical Service had 382 men, Madras, 228 medical appointments but only 217 men. Bombay 181. In July 1861 the total was 819, in July 1865 (after the Service was closed for 4½ years) 570, in 1871, 687, in 1873, 656, in 1882, 688, in 1887, 603, in July 1897, 631 and on January 1913, 770. The total has, therefore, decreased in the last half century from 819 to 770.

Lt-Colonel Crawford's chapter on the Double Commissions is full of interest, and even more so is the chapter on Military and Civil. Twice an attempt was made in the 18th Century to create two separate Services and twice it failed.

Lord Cornwallis's famous minute on the Service is given in full—important in many ways, but especially so as by these orders the Company's medical officers were given commissions (1788). In this minute Surgeons were appointed to each collectorate as well as to the Army. Lord Cornwallis commented on "the preference given by the medical gentlemen to situations in the Civil Line" and he said "he was far from thinking that such a Service should be deprived only of a due proportion of stations of that description, but it should be at the same time our care to confer them with discretion and to make them the rewards of those who have submitted to the more laborious duties of their profession."

Lt-Col Crawford's chapter on 'Rank' will be read with much interest. The matter has now been finally settled since the Royal Warrant of 26th August 1898. The chapter on Pay is naturally one of great interest. In the early days professional practice and trade was considered as supplementary to the poor pay given. The right of medical officers to take private practice was always acknowledged, but was definitely laid down in 1773 by Act XIII George III, Cap 63, sect 25, which Lt-Col Crawford quotes.

We propose in a later issue to give a further account of the contents of this most interesting book. Enough has been said to show that it is

one which should be in the possession of every officer in the Service.

A SUNDAY HOLIDAY FOR DOCTORS

In our November issue a correspondent called attention to this question and asked if something could not be done to relieve the hard-worked medical man of some of his work on Sundays.

Several correspondents have written in sympathy with the suggestion. It is pointed out that of all Government officials the medical man (and we may add the Jail department officer) gets few or none of the numerous holidays which so clearly show, in red on the Government calendar, the extraordinary liberality of Government on this matter. Owing to a slackness on the part of their own Administrative officers, the medical man can only get the ordinary ten days' casual leave—hence a change on Sundays is all the more necessary and essential. Real sickness must be attended to, emergency cases and accidents must be seen to as usual, but routine treatment at dispensaries and out-patients' hospitals need not be done on Sundays.

We understand that the Sunday holiday is recognised in some provinces and we quote the following extract from the Bombay Government rules for Aided Charitable Dispensaries—

"34. The following rules shall be observed and enforced with regard to the internal management and the duties of medical officers—

(1) The dispensary shall be open daily, except Sunday, for the treatment of ordinary out patients. On Sunday it shall be open only for urgent cases of illness or accident. On week days it shall be open for five hours daily, the hours of opening and closing being fixed to suit the season of the year and local requirements, and decided on by the Civil Surgeon in conjunction with the Collector.

(a) Urgent cases will be attended to at any hour on any day."

We think this is a matter which should be taken up in all Provinces that have not yet got this privilege.

DOCTORS AND QUACKS IN SIR WALTER SCOTT'S NOVELS

DOES the present generation read the *Waverley Novels*? If they do not they miss much. Our early love for these tales was revived on reading an article by Colonel Kenneth Macleod, M.D., I.M.S. (retd.), Honorary Physician to the King, in the *Caledonian Medical Journal* (July-October 1913).

Our younger readers will not remember Kenneth Macleod, he retired 20 years ago, after a long and successful career in Bengal, chiefly in Calcutta, where he was Professor of Surgery, and incidentally for 14 years Editor of the *Indian Medical Gazette*.

Colonel Macleod points out that in Scott's time medical science was in a state of transition, the spoilerative treatment of disease was giving way to the nutritive and stimulating, but bleeding,

cupping, leeching, and purging were still resorted to for the expulsion of peccant humours, and in *The Surgeon's Daughter* is the allusion to the old and the new methods of treating small-pox. In *The Heart of Midlothian* there is an appreciative mention of Jenner's great recent discovery of vaccination.

A curious contrast to modern methods is afforded by the question in *The Talisman*, "What wounded man inquires whether the Surgeon that tends his gashes has clean hands or no?"!

Sir Walter lived in Edinburgh in an atmosphere largely composed of the medical men who made the Edinburgh school famous.

In *Kenilworth* Dr Masters is introduced as a most skilful man in Queen Elizabeth's Court and the same physician gave an unfavourable report on the mental state of poor Amy Robsart.

In the *Fortunes of Nigel* (Time c. 1620) two apothecaries are introduced—and there is allusion to the celebrated East India Company's Doctor the Traveller Mungo Park in *The Surgeon's Daughter*. In the same story there is a fine and sympathetic description of the heroine's father Dr Gideon Gray, and in the same novel the hero is Adam Hartley, Gray's medical apprentice, who afterwards rescues the heroine and serves under Tipoo, son of Hyder Ali, in Mysore. The "Medical" humbug is well depicted in Dr Q. Quackleben, M.D., D.R., B.L.X.Z., (' in *St Ronan's Well* and in Dr Luke Landin in *The Abbott* and Dr Henbane Dwinning takes a prominent part in the story of *The Fair Maid of Perth*. Jewish Physicians are met with in *The Talisman*, *The Betrothed* and in *Ivanhoe*.

Quacks and other irregular practitioners figure in many of the novels, e.g., Sultan Saladin, in *The Talisman*, and Douban in *Count Robert of Paris*.

Colonel Macleod notices that in spite of the prominent place taken by matter medical in Scott's novels, the allusions to hospitals are remarkably few and the description of the East India Company's hospital at Ryde is a revolting one.

THE ROLE OF TUBERCULIN

VERY much has been written on the use of tuberculin in the treatment of tuberculosis and there have been suggestions for its trial or use in an extended scale in Indian Municipalities.

We are entirely opposed to such a use of tuberculin in India, and we believe that with the agencies possible in India this valuable but two-edged weapon will do more harm than good. The slightest carelessness or hasty or its use in any but highly expert hands has been found to be dangerous and we cannot guarantee against these risks in India if the remedy is used on a wide-spread scale.

We recommend our reader to obtain and read the excellent *Special Tuberculin Number* issued

by our contemporary *The Prescriber* (Vol. VII, No. 86, November 1913). In that special number will be found accounts of the preparation and use of Tuberculin and a detailed account of the many varieties, e.g., old Tuberculin T alt of Koch, Tuberculin Filtrate, original Tuberculin, vacuum Tuberculin, albumose free Tuberculin, new Tuberculin, new T Bacillary Emulsion, B & W's Tuberculin, Sensitised Bacillary Emulsion (S.B.E.), Von Ruck's T Vaccine, Iodised T, Aiseniel T, Iodoform T, Filiase, Tufile Tuberculin, Tuberculosisnastin, and a host of Tuberculosis serums.

A discussion on the value of Tuberculin at the National Conference for the Prevention of Consumption was held in London recently and we shall quote some opinions from men whose opinions must be respected.

Dr James K. Fowler offers from his experience the following conclusions—1. The use of tuberculin in any form in the treatment of the disease is not free from danger. Even with extremely small doses, gradually increased, the limit of tolerance may be reached suddenly and a reaction may occur. 2. In any case in which there is fever its use is absolutely inadmissible. 3. Fever is the guide to the activity of the disease, and, therefore, a remedial agent which can be used in afebrile cases only is, of necessity, of very limited usefulness. 4. General reactions are to be avoided, and if one occurs treatment must cease at once. 5. Focal reactions are dangerous also, for they cannot be controlled. They may occur in the region of an obsolete lesion and lead to its reactivity, with a resulting increase in the activity and severity of the disease. Such focal reactions have been known to cause the coughing up of calcareous masses and lung tissue with the development of a secondary cavity. 6. The most successful treatment should be on the lines of rest and exercise as originated by Walther.

D. Rist (Paris) uses sensitised bacillary emulsion, and emphasises the need for selecting suitable cases. He states that he has "never seen a patient doing well under tuberculin without remaining in doubt whether he would not have done as well without tuberculin." He never relies on tuberculin alone, and he suspects that the benefit sometimes seen may be due to detoxication, or merely to suggestion.

H. W. G. Mackenzie, of the Brompton Hospital for Consumption, says that he has tried tuberculin extensively, using all varieties in every way, and he still feels uncertain as to its value. Tuberculin treatment is still on its trial, and the results so far are not brilliant, certainly not convincing.

N. D. Bardswell quotes statistics of twenty months' work with tuberculin at the King Edward VII Sanatorium. He finds it difficult to say how much of a patient's improvement is due to tuberculin and how much to sanatorium treatment, but he considers tuberculin a useful addition to other methods, and it sometimes seems to expedite convalescence. It is quite unsuitable as a routine treatment. He strongly insists on the avoidance of reactions, and thinks that a rise of even one degree should not be allowed to occur.

In an article entitled "Some Thoughts on Tuberculin and Tuberculin Therapy" (*Jour. Vaccine Therapy*, August 1913), R. W. Allen quotes some of the opinions given above, and, after some observations of his own, gives the following as his conclusions—(1) Tuberculin has been far more abused than used, even by those who have utilised it most, it has been administered in a careless and haphazard way that would never have been tolerated in regard to many other drugs of much less therapeutic activity, (2) it has been employed in cases that were quite unsuitable, and in which its use was

contra-indicated either by the clinical type of the lesions or from the presence of a mixed infection, (3) its proper use is possible only if the administrator be well posted in bacteriology and in the principles and practice of artificial immunisation, and if he possess an extended clinical experience of pulmonary tuberculosis, and be prepared to devote to each individual case that amount of time which alone will enable him to estimate the precise effect of each dose, and so to learn the appropriate dosages and the appropriate intervals.

This is not a remedy to be used indiscriminately and in India at the present day we have no hesitation in saying that it should not be used and its value is "non-proven" and Tuberculin Dispensaries should not now be started in India.

VERRUGA PERUVIANA

The preliminary report of the expedition to South America from the department of Tropical Medicine of Harvard University is written by Dr R P Strong and his colleagues, is published in the *Journal A M A* (8th November, 1913), and deals with the nature of three obscure diseases known as Verruga peruviana, Oroya fever and Uta.

Even long before the days of the Conquistadores these diseases have been known, but recently it has been questioned if Peruvian wart and Oroya fever are one and the same, or two separate diseases. The name 'Oroya' fever was given to a severe fever outbreak which attacked the workmen on the Lima-Oroya railway line under construction in 1870. The medical student Carrion inoculated himself with blood from a Verruga tumour and unfortunately died of a fever which was said to be the same as 'Oroya' fever, or Carrion's disease as it was eponymously called.

Castellani and Chalmers (p 1198) give the opinion that the fever is one of the paratyphoid group and is quite distinct from Verruga.

Dr R P Strong and his colleagues agree in separating the two diseases and give evidence for believing that Oroya fever is due to a new species of parasite which is described as follows —

"*Bartonia bacilliformis* Gen. et sp. nov. Parasites consisting of rounded or oval forms or of slender straight, curved or bent rods occurring either singly or in groups, but characteristically in chains of several segmenting organisms, sometimes swollen at one or both ends and frequently beaded. Reproduction occurs by binary division. Endowed with independent motility, moving in the direction of the long diameter, living within the red blood corpuscles of man and producing a grave form of anemia known in Peru as Oroya fever. Stained preparations suggest differentiation of cytoplasm and nuclear material."

On the other hand Verruga is quite separate and due to a virus which may be transmitted to animals by direct inoculation. It is also quite different from either syphilis or yaws—the report describes it as follows —

"Verruga peruviana is a disease particularly characterised by an eruption on the skin and occasionally on

the mucous membranes, particularly of the mouth and throat. The lesions present great variations in appearance. The distribution of the cutaneous eruption resembles somewhat that seen in yaws, but in many other respects the lesions of the disease are entirely distinct. In uncomplicated cases, neither the parasites of Oroya fever nor those of malaria are present in the blood, though as Verruga peruviana is contracted in regions in which Oroya fever and malaria are common diseases among the inhabitants, and visitors are likely to contract such maladies, it is not surprising that concomitant infections with these parasites frequently occur."

In the same issue of the *Journal A M A* (p 1717) Mr C H T Townsend describes the first experimental transmission of Verruga by the medium of the blood sucking insect, *Phlebotomus Verrucarum* "biting gnat occurring in the verruga zones of the Peruvian Andes."

The other obscure disease investigated by the members of the Harvard expedition is called Uta, a name which has escaped even Castellani and Chalmers. Uta seems to be a disease allied to "oriental" soie, and Strong states that it is due to a species of Leishmania and possibly is similar to and allied to the naso-oral affection called in Brazil *espunaria* (Castellani and Chalmers, p 1556).

THE KATHIAWAR MEDICAL SOCIETY

We are very glad to welcome the inauguration of a new Medical Society at Kathiawari. There are far too few Medical Societies in India and such is especially needed in a portion of India so isolated as Kathiawari. It has been proposed to hold quarterly meetings at Rajkot or other convenient centre and to establish a reading-room and library at Rajkote.

The Chiefs of Kathiawari have from the commencement supported the proposal and owing largely to their support a library has been started and temporary arrangement made for its accommodation. It is proposed to publish the Society's work in the form of *Transactions* and we have before us the first two numbers. Major A Hooton, I M S, Dr Anklesaria, Dr Dinshaw, Dr Kallianwalla, Dr Kaishi, Dr Kothari, Dr Balia and Dr Shah, and many others, have supported the society. Dr Kothari read a useful and interesting paper on *Mrysias*, a disease which though not uncommon in India has had but little attention paid to it. Cases due to the screw-worm (*chrysomyia macellaria*) are most common in India. Dr Kothari refers to his notes of 12 cases, bleeding from the nose was present in all his cases and oedema of cheek, nose and eyelids and horrible decomposition and smell from the nostrils. (We published two cases in the *I M G*, for June, 1909.)

Dr D C. Oza, M B (Bombay), read a paper with cases on Puerperal Septicæmia. We have separately published Major Hooton's practical paper on the treatment of fractures and he also read notes of some interesting case of gangrene.

There is also a useful editorial note on the value of emetin.

The September issue of the *Transactions* records good progress. The Library has been opened formally by the Agent to the Governor and the Thikore Saheb promised valuable help. Assistant-Surgeon N G Shah, I M & S, has a useful and practical paper on mosquitoes and malaria, which he has also reprinted and published separately. It is a good résumé of the subject and diseases to be widely read.

We wish the Society every success.

THE attention of all Medical officers in military employ is directed to the very instructive and useful pamphlet entitled *Medical Tactics* by Colonel P Hehn, F R C S, I M S, Assistant Director of Medical Services, 6th (Poona) Division. In it Colonel Hehn draws the lessons from the medical manœuvres of 1912 at Rawal Pindi and the pamphlet must have been very useful to those Medical officers who took part in the recent medical manœuvres at Poona.

THE November number (Vol. II, Part 3), of the *Journal of the London School of Tropical Medicine*, contains much of interest, among which we may mention Dr R E Drake-Brockman's article on an epidemic of Relapsing Fever in British Somaliland, the parasite being of the African variety. Lieutenant-Colonel A Alcock, C I E, F R S, I M S, (ret'd.), gives a useful synopsis of anopheline mosquitoes of Africa and of the Oriental region, which will be useful for medical men who attempt to identify mosquitoes.

IN the *Medical Chronicle* (Nov. 1913), is reprinted a modernised version of a quaint and interesting pamphlet on plague entitled "A Little Boke for the Pestilence," published about 1485 and attributed to Knutsson, Bishop of Vasteras in Sweden.

E L WALKER has shown (*Philippine J. of Sci.*, Oct. 1913) that in the Philippine Islands parasitization of man with *Balantidium coli* is relatively common, and that balantidia are capable of penetrating sound intestinal epithelium and do not merely invade lesions due to bacteria. The ulcerative process is very slow. Persons parasitised with *Balantidium coli* are liable to develop balanticidal dysentery which, however, is rare. The domesticated pig is the chief source of infection.

Medical Entomology by Captain W S Patton and Capt F W Cragg, I M S, has just been published. It is a splendid volume, most useful and handsomely got up and well illustrated. It costs one guinea. We review it in our present issue.

Reviews

The Prescribers' Pharmacopœia, London, 1917—H FROWDE and HODDER and STOUGHTON

THIS little pamphlet is the outcome of a demand by the Local Medical Committee of the County of London for a collection of formulæ for use in the rough and ready methods of practice possible under the new Insurance Act. If the unfortunate panel service doctors are to make a livelihood it can only be done by treating a large number of patients daily, and therefore no time can be lost in writing prescriptions and consequently these numbered formulæ will be used.

There can be no doubt that this will save a vast amount of labour. The formulæ are all of the approved kind and it will be hard if some of the so printed formulæ do not suit the case. The list contains enemata, Lincti, lotions, mixtures (standard dose one tablespoonful), nebulae, pastilles, pills, suppositories, and ointment.

Another part of the little book gives the composition of articles placed on the lists of drugs, issued by the London Insurance Committee, e.g., compound chloroform, collodions of various kinds, emulsions, malt extracts, syrups, and even tablets. Several useful surgical formulæ are also given.

The little book is undoubtedly useful, but its necessity does not make us like any the more the methods of practice and treatment made so general by the Insurance Act.

Sciatica: a Fresh Study—By WILLIAM BRUCE, M A, LL D, M D (Aber.) Baillière, Tindall & Cox Pp 175, Plates 18

FOLLOWING a historical survey of the views generally held regarding the essential lesion underlying sciatica, the writer elaborates his own view that sciatica is really an affection of the hip-joint, rheumatic or gouty in origin. The steps by which he arrives at this opinion are ingenious and reasonable. They are anatomical and clinical, and are fully considered in the book, which should be consulted by those who are interested in the subject. They afford a more reasonable account of the disease than does the accepted theory of a primary affection of the sciatic nerve. There are further notes on close upon 700 cases, and diagrams, photographs and radiographs illustrate the points referred to in the body of the work.

Book for Mothers and Nurses on the Management of Children—By MRS. USHER (J and A Churchill)

THIS little book is a mine of common sense and good advice written by the mother of a large family for those who are about to be or have become mothers and for others engaged in the management of children. It in no way attempts

to supersede the doctor and does not give advice concerning matters which would lead mothers to accept responsibilities which are too great

The book is divided into three parts. The care of Infants, Childhood and Youth, each section is eminently practical and to the point, the necessity of weighing infants, the importance of circumcision, if it be required, hints regarding the kissing of infants by strangers and the method of guarding against contracting, what might be called, the habit of constipation, are all emphasized.

We have no hesitation in saying that nothing but good can accrue by the perusal of this useful little brochure and suggest that this book be recommended to expectant mothers by their medical advisers.

Diseases of Children by various authors —
Edited by ARCHIBALD E GARROD, F R C P, F R S, F E BATTEN, M D, F R C P, and HUGH THURSFIELD, M D, F R C P Pages 1184 Illustrations 182 Plates 2 Price 30s London Edward Arnold Bombay Messrs Longmans Green & Co

THE editors of this book have been impelled to publish it on the grounds that with the increasing specialism and knowledge of the last few years it is practically impossible for any one individual to have a complete knowledge of the whole field of medicine or even of some of its under sub-divisions.

The editors are themselves responsible for many of the sections and have associated with them several other authorities in this branch of medicine. The arrangement of the book is the usual one of systems, i.e., elementary, respiratory, etc., and a convenient point is that references are given in close relation with the text.

Considering the size of the book there are not very many illustrations, but those given are clear and good. It is difficult to select any point for criticism, all the sections being excellent.

It may be quite fairly said that the editors have succeeded admirably in their self-imposed task of presenting a complete and up-to-date account of this important branch of medicine.

The book can be thoroughly recommended to any one interested in this branch of medicine, and as a reference book should be invaluable.

The printing, etc., is good.

MERCK's Annual Report, 1912 Vol XXVI
By E MERCK, Darmstadt.

THIS well known volume published by E Merck of the great chemical works at Darmstadt, sums up the literature of all recent advances in pharmaceutical chemistry and therapeutics. The present volume is very complete, it gives some 70 pages to the group of lipoids and especially to lecithin. The rest of the book is given to new preparations and drugs and to an index of diseases with symptoms and indications for treatment.

It is a book which should be in the hands of all interested in new drugs and preparations.

The complete index, and bibliography add to the usefulness of the book.

Synopsis of Midwifery — By ALFRED W BOURNE, M B (Cumb) Bristol John Wright & Sons, Ltd, 1913

THIS is an admirably concise and complete handbook to Obstetrics, and must prove of great use to students preparing for midwifery examinations. It is not intended to take the place of any ordinary text-book on midwifery, but it generally follows the lines of Dr Eden's well-known text-book on the subject. It is a model of conciseness and special attention is given to treatment. It is hardly a book for the practitioner, but for students revising their work before an "Exam" it should prove most useful.

Massage Its Principles and Technique
By MAX BOHM, M D, Berlin Edited by CHARLES F PAINTER, M D, Professor of Orthopedic Surgery at Tufts College Medical School, Boston Pp 88. Illustrations 97 Philadelphia and London W B Saunders Company, 1913

THIS American edition of Dr Bohm's "Treatise on Massage" has been brought out with the idea of extending the practice of massage.

It is true that the medical profession are not securing for their patients the benefit they might, were they to be *au fait* with the technique of massage. All know of the benefits inherent in that form of physical therapeutics, but how many can really apply it intelligently and so reap its full advantages?

In the first chapter dealing with general technique, the various manipulations of effleurage, petrissage and tapotement, etc., are carefully described. Then follows a chapter on the massage of joints, which is succeeded by one on the massage of muscles. The book is brought to a close by a somewhat cursory description of the massage of nerves and the abdomen and general massage.

Seeing that the illustrations, a marked feature of the book, are profuse, obviously with the idea of overcoming that difficulty experienced by all endeavouring to write a book which can be understood by doctor and layman alike, it is particularly unfortunate that so many errors should have crept in among their descriptions.

Fig 47 shows the extensors being kneaded and not the flexors as stated.

Fig 60 certainly does not depict "kneading of the back part of the deltoid," but appears to be effleurage of the anterior part.

Fig 63 shows effleurage, and Fig 64 kneading of the anterior tibial muscles and not, as we read, of the peroneal muscles, effleurage of which is to be seen in Fig 65 and entitled Effleurage of the Fibular Muscles.

On page 66 are written the words "Tensor Fascia Late". We presume that this is a printer's error for "Tensor Fasciae Late" which,

however, can hardly be called the "group of the tensors of the large thigh muscles," as we note on page 68, Fig. 70.

For these and other reasons we fear that we cannot confidently recommend the book to the practitioner, in its present edition.

Practical Bacteriological and Blood Work—

By E R STITT, M.D., Third Edition Post 8vo
H K Lewis Price 6s 6d net

THIS little book has already achieved success and in four years has reached its third edition.

It well deserves its name, it is eminently practical. The third edition has been enlarged and thoroughly revised, and by the use of large and small type more matter has been given without unduly increasing the size of the book. The book is profusely and well illustrated. The section on the study of the blood is admirably clear and precise, the explanation of Wasserman technique is as clear as could well be. The blank pages for MSS notes are useful.

We have seen many laboratory manuals on bacteriology and we know of none more practically useful than that of Dr. Stitt.

Hygiene and Public Health— By L C PARKES,
and H R KENWOOD, Fifth Edition London
1913 H K Lewis 12s 6d net.

THE last edition of this popular book only appeared in 1911 and within two years we have another, the fifth edition. The new volume has been thoroughly revised and new matter introduced and it will be found as before a most useful and reliable manual.

The chapter on diet is good, but the remarks on the acceptance of Chittenden's results needs some modification. The chapter on communicable diseases is excellent and especially the valuable facts and figures on vaccination. In the chapter on cholera the importance of carriers in the spread of the disease is ignored. The epizootic diseases are well described. The chapter on school hygiene is excellent, and that on disinfection clear and practical.

We can again strongly recommend this useful and practical book on hygiene and public health.

Livingstone's Catechism Series.—Bacteriology,
Pts 1 and 2 (2nd edition) Medicine, Pt 1,
(2nd edition) Edinburgh E & S. Livingstone
1s each

THESE are three excellent examples of this well-known series of students' cram-books and they now appear revised and enlarged in a second edition. The little book on medicine before us is confined to specific infectious diseases of temperate and of tropical climates. The information given is wonderfully accurate and compressed and it is extraordinary how little is left out which is of real importance. The great diseases of the tropics, plague, cholera, dysentery and malaria and leprosy are admirably done.

The two parts of the Bacteriology Catechism are also good, in fact, if a student has during the session worked with his Mun and Ritchie, he cannot do better than rehearse his work and renew it by reading over and over these useful pages. Provided they are not used to replace text-books, these are most useful books for examinations.

Mayo Clinic Papers, 1912— By W J MAYO,
M.D., C H MAYO, M.D., and their Associates
at St Mary's Hospital, Rochester, Minnesota
Pp 842 with 219 illustrations Philadelphia &
London W B Saunders Company, 1913 Cloth,
24s net

THIS, the 6th volume of collected papers by the staff of the Mayo Clinic, contains the articles written by them and presented for publication to the various medical journals during the year 1912.

The range covered is tremendous and it would be an impossibility to review each individual subject within the available space.

The first two hundred odd pages contain many and varied papers on subjects connected with The Alimentary Canal. In making mention of two only, namely, one on "The Diagnostic Worth of the Glycyltyptophan and Tryptophan Tests in Diseases of the Stomach," and the other on "Intestinal Diverticula," it is evident that, in the variety offered for perusal in this section, the devotee of any special branch of Medical Science will find something of interest to him.

In the excellent article on Intestinal Diverticula, the author, Dr McGlath, gives it as his opinion that the relationship existing between diverticula and appendices epiploicae is due to the fact that these latter fatty masses are situated either directly on or close to the points where the larger vessels enter the intestinal wall, points where consequently there is somewhat less resisting power than elsewhere on the intestinal wall and where consequently protrusions are more liable to occur.

Hernia is dealt with in a few papers in the second section. The third section on the Urogenital organs takes up some 200 pages and forms most interesting reading. Embryology is at all times a most difficult subject to grasp and it is therefore a pleasure to come across descriptions such as that by Charles Mayo on the Development of the kidney and the lucidity of which will be appreciated by all.

We are inclined to agree with Dr William Brasch when, in his paper on "The early diagnosis of Urinary Tuberculosis," he lays down the dictum that "for the best interest of the patient it would be well to regard every case of diurnal irritability of the bladder persisting over a period of several months and accompanied by more or less pyuria, as due to renal tuberculosis until it can be proved otherwise." He goes carefully into the steps that are to be taken to determine

whether or not, in patients with persistent irritability of the bladder, the symptoms are caused by renal tuberculosis.

We also note in this section that for the past few years it has been the custom in the Mayo Clinic to perform Prostatectomy entirely by the Supra-pubic method.

In the paper on Benign and Malignant Ovarian Cysts, the different linings of the cysts have been used as a basis for their classification, the three different linings, (1) Round or Oval many layered epithelium, (2) Columnar epithelium, (3) Lutein Cells, giving rise to the three main classes of Simple cysts, Cysto-adenomas and Corpus Luteum cysts, these three main classes being further sub-divided into sub-varieties such as unilocular, multilocular, etc.

It is interesting to note that, although cancer of the cervix is considered by most authorities to be more frequent than cancer of the body of the uterus, in the series of cases seen in the Mayo Clinic from 1900 to 1910 the reverse has been found to be the case.

The section on Ductless Glands occupies some 100 pages and teems with interest containing, as it does, papers on the Spleen, Thyroid and Thymus. Many of the papers, however, in this section are similar, the one to the other, for instance, page 547 is a repetition of page 543, p 553 of p 541, and p 554 of p 544. The article on the Surgical Importance of the Thymus, where we find a review of the condition known as Status Thymicolumphaticus, is specially good.

The volume terminates with a collection of General papers dealing with such subjects as Fatal Post-operative Embolism, Graduate Instruction in Medicine, etc. In the paper on the Noguchi and other reactions we see mention made of Well's Cobia Venom test for Syphilis. This appears to be easily carried out and certainly merits further trial. It is based on the observation that the corpuscles of luetic patients are more resistant to haemolysis by snake venom than are those of normal individuals. It is also claimed that the test is more active in latent syphilis than in any other haemolytic test.

At the end of most of the papers the conclusions drawn by the writers are shortly summarised. To the busy man these summaries alone would well repay their perusal.

Throughout the book authorities are plentifully quoted and full references given. Statistics are frequently brought in and in many instances brief records of illustrative cases, printed in smaller type, are noted. The illustrations are splendid, but here too we find several repetitions, Fig 118 being a replica of Fig 114, 119 of 115, 129 of 116, and 122 of 117.

Errors are few and far between. After a most careful perusal we have noticed only the following—On page 28, Fig 52 is wrongly referred to, on page 334 intervesical is written for intra-vesical, on page 395, Fig 138 in the text should be Fig 139, on page 491 reference is

made in the text to Case 3 (Fig 169), whereas Fig 169 refers to Case No 2. On page 530 continues should be written in the plural.

In conclusion we may state that the perusal of this volume has given us great pleasure. It is a book deserving of careful study and it is especially invaluable as a work of reference.

The Healthy Marriage.—By G T WRENCH, M.D. (J & A Churchill)

This book is a medical and psychological guide for wives and as such amply succeeds in being so, it is full of commonsense and practical suggestions, the book is written with sound judgment and the delicacy of expression such as one would expect from the pen of such a well-known writer. We cannot but help thinking that the chapter on Labour might have been omitted with advantage.

There is much contained in this little volume which would amply repay a prospective bridegroom to peruse and we feel sure that such a procedure would, in many cases, help to make the first few weeks of married life less uncomfortable and assist many a young couple to avoid certain quicksands which all have to negotiate.

Dr. Chavasse's Advice to a Mother on the Management of her Children—17th Edition, revised. By T D LISTER, M.D. (J & A Churchill)

The fact that this book has reached a 17th edition speaks for itself. Much useful information is contained between the covers, but we cannot but help thinking that in some respects it is too ambitious and attempts to impart information which must be incomplete and have the effect of unnecessarily making a Mother unduly alarmed, the general advice upon the management of children and the practical suggestions regarding their up-bringing are excellent.

Cambridge Manuals of Science 1—The Life-Story of Insects. 2—The Flea—Cambridge University Press 1s each

These are two admirable little books in this most useful series published by the University Press, Cambridge.

Mr G H Carpenter, of Dublin, writes the little book on the insect's life story and in very clear and even simple language he explains the facts and meanings of insect transformations. The story of the larval and pupal stages is very interesting.

In the little book on *The Flea* Mr Harold Russell gives in plain language an excellent account of these mischievous little insects and the book will be welcomed all the more as there is no satisfactory book readily at hand on this subject which is of importance to medical men. The little book consists of 120 pages and 8 chapters, and we strongly recommend medical men to read it. The chapter on the human flea, the Chigoe or 'Jiggee' and the plague fleas are

all well worth reading and the appendices are also useful.

This is an admirable series, neat and elegantly got up, one shilling each in cloth, and half a crown in leather.

Influence of Thermal Environment on the circulation and the Body Heat—By EDGAR R LYTH, M.B. Durham, M.R.C.S. Eng.

THIS little book is remarkable for the large number of observations the results of which it embodies over 25,000. It treats of a subject of which we know little from a practical point of view. The first six chapters are concerned with the influence of accumulation of heat or exposure to cold—(brought about by increasing or reducing the overlying coverings when the body is recumbent in bed)—on the rectal and superficial temperatures and on the pulse rate. The later chapters deal with the effects of hot and cold baths and hot and cold water in motion.

The author has no doubt taken an immense amount of trouble in making the observations and correlating the results. His experiments are spread over a period of ten years. The methods employed are, however, open to several objections, they and the discussion of the results lack scientific accuracy and completeness. Contrary to the rule in modern scientific work the Fahrenheit degree has been used throughout—the reason for this is not obvious. The method employed for taking the superficial temperature by applying the bulb of the thermometer to the surface of the abdomen is not accurate, for, especially in the uncovered state (cold condition of the author) the instrument must register a temperature between that of the skin and the surrounding air. Means should have been employed to prevent the thermometer being influenced by the temperature of the surrounding air or water by an air jacket or other suitable means. Even the axilla would have been a more suitable position. Again no account is taken of the normal daily variation in body temperature, though this may amount to a difference of over a degree Centigrade between the hours of 6 A.M. and 6 P.M. Some of the experiments lasted several hours, and, as the variations of temperature were confined to a couple of degrees and in many cases to one degree, this factor must have had a considerable influence. Again, no mention is made of the relative humidity of the atmosphere, also a factor of importance in heat dissipation.

The terms "vascular pressure" and "systolic impulse pressure" are not usually employed in the sense in which they are used in this book. The mean pressure shown when a Hæmo-dynamometer, such as Oliver's, registers pulsations of the greatest amplitude is properly called the "diastolic pressure". Similarly, "systolic impulse pressure" ought to be simply systolic pressure.

Many of the objections mentioned, e.g., normal daily variations in temperature, might have been

eliminated by using a control kept in what the author terms the neutral state.

Notwithstanding its deficiencies the book should be a welcome addition to the library of the Physiologist and the General Practitioner. The author has done a distinct service to physiology and medicine in drawing attention to the influence of environment on the pulse and body temperature, for we are rather inclined to look on the figures 72, for the pulse, and 98°4 for the normal body temperature, as fixed standards, any variation from which is an indication of a diseased condition, and to ignore the occurrence of physiological variations.

Materia Medica Notes—By J. A. WHITLA, E. & S. Livingstone, Edinburgh, 1913. Price 2s. 6d.

THIS is a very useful little book and in many ways it will prove helpful to the student.

In it the account of the official drugs is given premier place and then when the student comes to study the Galenical preparation he will know something of the origin of them.

We think the arrangement is a practical one. The book is not intended to rank as a text-book, but rather the preface says to be a "Concise Companion" to any one of the many excellent text-books on the subject.

We can certainly recommend this little book.

Disease of Children—By JOHN McCRAW, M.D. Ballière, Tindall & Cox. Demy 8vo, price 10s. 6d. net.

A NOT expensive and handy volume on diseases of children is an admitted want and from a perusal of Dr. J. McCraw's book we think this want will be satisfied. This book will appeal not only to the senior student but also to the busy practitioner. Dr. McCraw's experience as a physician to the Belfast Hospital for children is sufficient warrant for his writing another book on this subject. We have read the book with profit and interest, and of the many good chapters we think the best are those on infant feeding, the specific fevers and on diseases of the respiratory organs. There is also a most useful chapter entitled "General Information" dealing with dentition, eruption periods and general diagnostic methods.

The book is one which we can confidently recommend.

Minor Medicine—By D. G. WYNTER, 2nd revised edition 1914. Butterworth & Co., India, Calcutta.

THIS is a useful book and deals mainly with subjects little discussed in text-books but which are of vital importance to the practitioner—such as constipation, cracked-lip, toothache, fissure of anus, baldness, sty, rashes from plants, chilblains, warts, ingrowing toe-nail, blisters, removal of stains, relaxed throat, nasal catarrh, insomnia, persistent headache, neuralgia, syncope, palpitation, spasms, minor ear troubles, conjunctivitis, diarrhoea, the morning bath, diet, clothing, the dwelling house, use of alcohol, obesity, kidney

disease There is a useful collection of formulæ at the end The book is certainly useful and few readers will not benefit by a perusal

Text-book of Medical Entomology—By Capt W S PATTON, M.B., M.S., and Capt F W CRAGG, M.D., M.S., London and Madras Christian Literature Society for India Price, one guinea

THOUGH the pure scientist might object to the expression "Medical" Entomology, there can be no doubt that this title clearly expresses the present handsome text-book It is not merely a text-book on general entomology, it also deals largely with the practical aspects of the subject to sanitation, or with the particular forms with which the medical officer is concerned It is in fact a guide to the study of the relations between arthropods and disease and not merely a text-book on entomology—but it also deals with many blood-sucking arthropods which, so far as is at present known, have no connection with disease

When we consider the few imperfect and scattered libraries in India from which a student can get access to papers and books published in many languages and at various periods, we must admit that Captains Patton and Cragg have been well justified in producing this large and comprehensive text-book

We should now indicate to our readers as fully but as briefly as possible the enormous amount of information contained in this valuable book After a preliminary chapter on the zoological position of the blood-sucking arthropoda, the next one is devoted to the anatomy, etc., of blood-sucking diptera and it runs to 93 pages, clearly written and abundantly illustrated Chapter III treats of the order Diptera and its sub-orders and secondary divisions, *Orthorhapha* (*Nematocera*, *Brachycera*), *Cylorrhapha* (*Aschiza*, *Schizophora*) and *Pupipara*. Chapter V deals with fleas and will be found to be a clear and admirable account of the *Siphonaptera* The next chapter, in 44 pages, describes Bugs—or *Rhynchota*, and their relationship to diseases A full section is devoted to the *Cimicidae* family and especially to *C. lectularius* and *C. rotundatus*. Chapter VII deals with the *Anoplura* or Lice, and is fully and well illustrated, a very useful classification is given and a key to their identification taken from Enderlein Chapter VIII is given to the *Ixodidae* or Ticks, the several classifications are detailed, and Neumann's key, and a useful bibliography are appended.

The order *Acarina*, or mites, is described in chapter nine Chapter X deals in several sections with the family *Larquatulidae*

The student will read with much profit the practical chapter on laboratory technique and a useful chapter is added on the relations of Arthropoda to their parasites The index is full and good We must especially refer to the illustrations, a special feature of the book, most of which have been drawn by Miss Patton, and are admirable

The book has a preface or foreword by Sir C Pandy Lukis, but it is one which will justify its existence It is emphatically a good book

A Laboratory Manual of Invertebrate Zoology—By G A DREW, Ph.D., Second Edition W B Saunders & Co., Philadelphia & London

THIS book is arranged on a novel plan The student is not told what he will see, but his attention is drawn to certain structural features and he is directed to describe what he sees in them Such a method affords a very sound training The book however is not likely to be of much service in India, as only a small proportion of the types chosen for examination are available Much stress is laid upon the "wonderful adaptations that fit the different animals for their particular lives" There is however much difference of opinion as to the value of the study of adaptations The work terminates in a useful Glossary Some of the definitions seem rather unusual, but this is perhaps because they are general anatomical terms applied especially to invertebrates The definition of Homologous as "of similar structure" is somewhat misleading For example, the paired fins of fish are usually considered to be homologous with the limbs of other vertebrates, but they are not of similar structure The book will no doubt serve well the purpose for which it was written

AN APPEAL FOR LIBERAL ENDOWMENTS FOR THE SCHOOL OF TROPICAL MEDICINE OF INDIA AND RESEARCH LABORATORIES, CALCUTTA

THE foundation stone of this Institution will be laid on Tuesday, February 24th, by His Excellency Lord Carmichael, Governor of Bengal In view of the unique nature of the Institute in the tropics, and the unlimited scope it affords for life-saving research on the numerous tropical diseases which annually carry off several million souls in India alone, it is hoped that this appeal will meet with a response which will make it possible to announce very substantial endowments at the time of the ceremony

The Government of India have provided six lakhs for the site and the laboratory, and have agreed to contribute towards the up-keep of the school, thus emphasizing the Imperial character of the work

Calcutta, having been honoured by being chosen as the location of this Institution, should show her appreciation by providing it with liberal financial support Much money has been given for the support of hospitals and medical research in Bombay and Madras, as well as for the Lucknow Medical College in the United Provinces, especially by wealthy Indians A great opportunity is now afforded to Calcutta and Bengal to excel in such a practical form of philanthropy

This appeal is also addressed to all India and beyond, for any discoveries made in the School

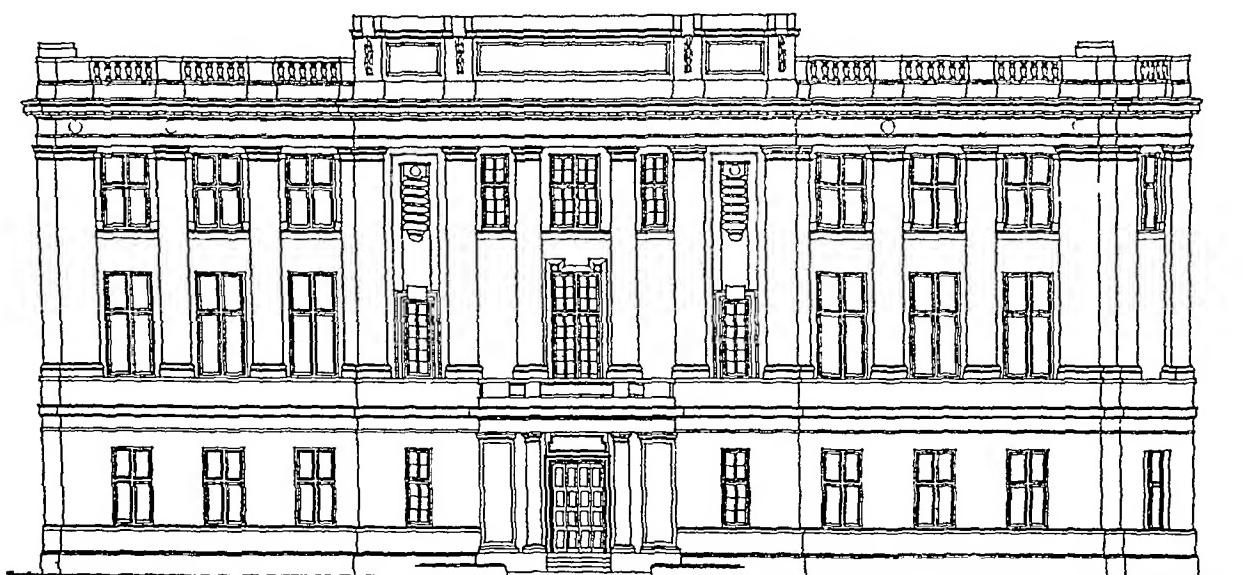
of Tropical Medicine will at once be rendered available for the relief of suffering and the saving of life in every tropical country. Medical graduates will also be welcomed to the school from all parts of the world.

The north and east elevations and the plans of each floor of the new laboratories are shown in the accompanying illustrations of the designs of Mr H. A. Crouch, Consulting Architect, Bengal. The building will accommodate several whole-time research workers in addition to the teaching staff. The sum of four lakhs of rupees, or annual subscriptions of Rs 20,000 guaranteed for at least five years, will be required for the endowment of each additional research investigator. The laboratories have been designed so as to allow of extension to accommodate a further number of workers, when funds are available for employing them. In short, the possibilities of carrying out practically important investigations

important advances have already been made in the treatment of cholera, dysenteries and liver abscess by one or two investigators. How much more can be done when a large and carefully selected band of scientific workers is available, time alone will reveal.

THE URGENT NECESSITY OF A SPECIAL HOSPITAL FOR TROPICAL DISEASES

The famous Pasteur Institute of Paris and the Koch Institute of Berlin were built away from any hospital, but in the case of each it was subsequently found to be necessary to construct hospitals in connection with them, in order to allow of the most useful type of research work being undertaken. In the case of the Rockefeller Institute of New York, a large hospital, eleven stories in height, was from the first built side by side with the research Institute, with the result that the discoveries made there during the



WEST ELEVATION

of the tropical diseases, which cause over one-third of the deaths in Calcutta, and at least as large a proportion over India as a whole, is only limited by the amount of financial support which is afforded to the new Institution.

The special rôle of the laboratory will be to investigate, on practical lines, cases of tropical diseases in the Calcutta hospitals, with a view to finding more accurate methods of diagnosis and improved treatment. The pharmacology of Indian drugs will be included in the scope of the enquiries. Hitherto, nearly all the medical research laboratories in India have been situated in the hills or several miles from any hospital, as at Gundy, near Madras, and Patel, on the outskirts of Bombay. The new Calcutta Institute will start with the inestimable advantage of the closest possible association with the premier hospital of India at the Calcutta Medical College where

last few years are second to those of no laboratory in the world. The Nobel prize in medicine was recently awarded to one of the investigators.

A site will very shortly be available immediately to the south of the School of Tropical Medicine Laboratories for the construction of a small special hospital for tropical diseases, as an integral part of the institution. This will allow of special investigations of important diseases being undertaken with the best chance of obtaining practical results.

A sum of two and a half lakhs of rupees is urgently required to enable this hospital to be built as soon as possible. Donors of sums of Rs 50,000 and upwards will be entitled to have a ward called after themselves or any relative they may wish to commemorate. Similarly, subscribers of Rs 5,000 can have a bed named after them if they so desire.

RESEARCH SCHOLARSHIPS TO ENABLE INDIANS TO BE TRAINED IN MEDICAL RESEARCH

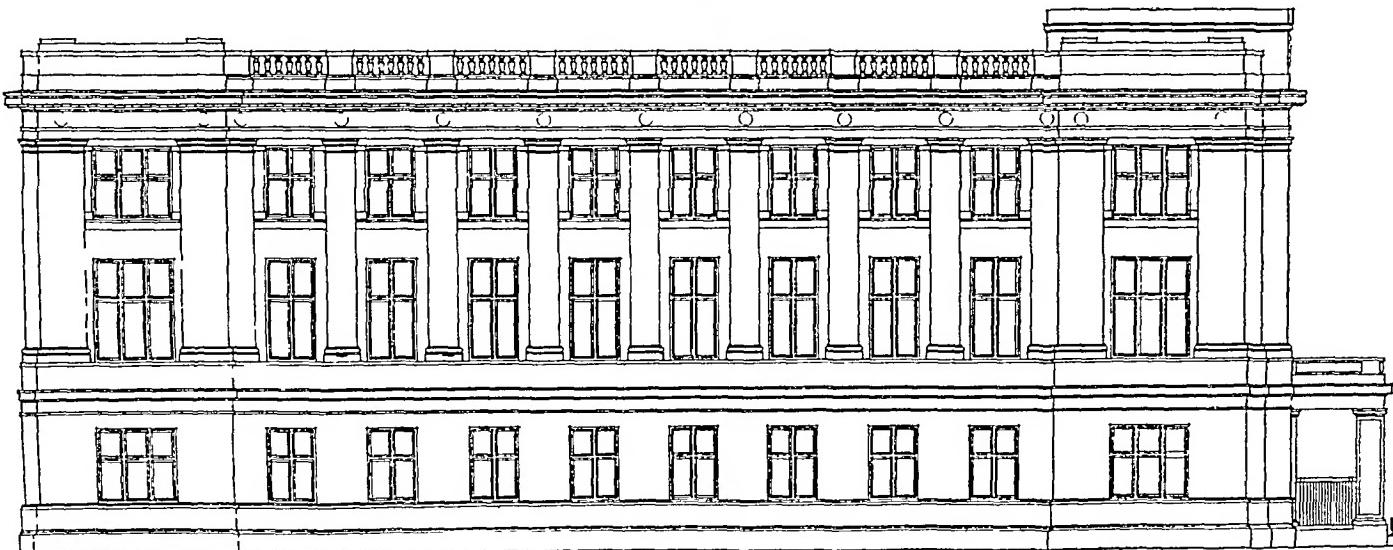
The great success of certain Japanese medical investigators makes it advisable to afford better opportunities to specially selected Indians to devote their whole time to such work. For this purpose liberal endowments are required, the provision of which should especially appeal to wealthy Bengalis, as so large a proportion of our medical students belong to that race.

ENDOWMENTS IN RESEARCH IN TROPICAL MEDICINE AS A BUSINESS PROPOSITION

It is becoming increasingly recognised in all civilised countries that scientific medical research yields the richest possible return for the money expended on it. Recent advances in tropical medicine alone enabled American engineers to triumphantly cut the Panama canal, after the great Ferdinand de Lesseps had been defeated by the in-

receives the support it deserves. The Rockefeller Institute in New York has received £2,500,000 in endowments. The London School of Tropical Medicine, which is doing excellent educational work, although lacking a tithe of the opportunities for research which Calcutta presents, has recently collected over ten lakhs of rupees for extensions alone, while the Liverpool School has had several chairs endowed by wealthy citizens, and also received large sums for research expeditions.

Is it too much to expect the wealthy Princes, Noblemen and Commercial Magnates of India to rise to the occasion, and furnish the large sums of money which are necessary to enable the School of Tropical Medicine of India and Research Laboratories in Calcutta to make full use of its great opportunities, and thus adequately fulfil its high distinction in discovering scientific methods of preventing and curing the common diseases, which cause great suffering and loss of



NORTH ELEVATION

*H. J. French
acting Assistant Secy. / Dated*

sidious and invisible microbes. In India the paralysing shortness of labour, which so seriously handicaps the principal industries, will be largely remedied when the heavy sick-rate and mortality due to tropical diseases is materially reduced. It would handsomely pay the jute, tea, coal and cotton industries to each provide Rs 20,000 annually to enable additional research workers to be employed in connection with the School of Tropical Medicine to investigate the more deadly diseases, apart altogether from the humanitarian aspect of doing something to alleviate the sufferings of the toilers who create their wealth.

THE NECESSITY FOR LIBERAL RESPONSE TO THIS APPEAL FROM ALL OVER INDIA

Enough has been said to show what a great work lies before the new Institution, if only it

life throughout her wide territories and among her teeming population?

A fund has been opened with the Bank of Bengal to which all subscriptions may be sent. These should be made payable to "The School of Tropical Medicine Endowment Fund". All communications should be addressed to Lieut-Colonel Leonard Rogers, I.M.S., Medical College, Calcutta, the Honorary Secretary of the fund, who will be glad to supply additional copies of this appeal to any who may be willing to help in collecting money for the fund.

DESCRIPTION OF THE SCHOOL AND RESEARCH LABORATORY BUILDINGS

The illustrations show the north and east elevations and each of the three floors. The entrance will be in the new 100-foot Central

Road of Calcutta, which the Improvement Trust will construct, and will lead into the hall and staircase. The ground floor of the north wing accommodates the Biological Laboratory of the Medical College. This wing has a north-lighted front suitable for microscopical work of 114 feet, which will eventually be extended by another 60 feet to the east. To the south of the entrance hall there are two large rooms 40 feet by 19½ for bio-chemistry and experimental pharmacology, respectively.

The first floor contains the teaching portion of the School of Tropical Medicine in a compact and convenient manner. In the centre of the north wing the practical class-room for microscopical teaching is placed with 56 seats, which can be further increased if it should become necessary at any future time. To the west is a general pathology and bacteriology research room 44½ feet long with three large north windows, in which the post-graduates will be encouraged to learn research methods by working out their cases by bacteriological and other examinations. Similarly, on the east of the class-room is a protozoology laboratory, while a smaller working-room and office for the Director completes this suite of rooms. To the south of the stairs is the lecture theatre, which can be rapidly darkened and is arranged for the use of the epidiascope and of a cinematograph, in addition to the usual black board and diagram screen.

The second floor provides a large room for the library over the lecture theatre, while the north-lighted wing is entirely devoted to research laboratories, including four separate working rooms, one of which will be kept permanently at a temperature not exceeding 70° F all the year round to facilitate certain kinds of work. A large sterilising room for the preparation of culture-media completes the arrangements.

The north elevation shows the extensive suite of rooms available for microscope work, while an interesting feature of the east front is the provision for a rôle honour of the names of past and future distinguished medical investigators.

The foundations are designed to carry a fourth storey, when it is required by the natural growth of the Institution, which will be eminently worthy of Calcutta and India, and of liberal support.

SPECIAL ARTICLES

I

ACCLIMATISATION OF NORTHERN RACES IN THE TROPICS

In October last at a meeting of the *Society of Tropical Medicine and Hygiene* in London, the President Sir R. Havelock Charles, G.C.V.O.,

IMS (i.e.td.), delivered a very interesting introductory address on neurasthenia and its bearing on the decay of northern peoples in India which gave rise to a useful discussion.

In a previous paper read at the B.M.A. meeting in 1910, Sir Havelock Charles discussed the same problem and said that the best kind of man to go to the tropics is "the good ordinary type of Britisher with a clean head, 'well screwed on,' an even temper, not over intellectual, who can take an interest in things around, not unduly introspective, one who can work hard and find a pleasure in it, capable of bearing exposure to the sun, one who will practice temperance in all things—with self-control and common sense."

It is difficult to improve upon the above description of the man who does best in a climate like that of India.

The expressions "Punjab Head," "Burma Head" are well-known and generally understood, but we think the type is less often seen now-a-days than it was 20 or 30 years ago. Sir Havelock describes such a person as follows, the likeness will be recognised—

"Many years ago, when I began my life in India stationed in the Punjab, I often heard it said of individuals in the various services, 'Oh! such and such an one ought to go to Europe for a bit—he has got, or is getting, *Punjab head*' On enquiry I found the signs of this peculiarity were—that an officer, otherwise in every way a good fellow, had become short tempered, forgetful of names, troubled with sleeplessness, given to feel his work too much for him, disinclined to take responsibility, given to make molehills into mountains, procrastinating, susceptible on slight exertion, mental or physical, to fatigue, and with a loss of all powers of concentration. In fact an irritable man, more or less unequal to his work, though otherwise fairly fit, save for symptoms said to be due to 'liver.' Subsequently I found that, in Bengal and Burma, a similar train of symptoms were well known, and designated respectively, *Bengal head*, *Burmese head*. Those affected were generally such as had been in the country some considerable time without taking furlough, men strenuous at work and valuable as such."

Since then, during much travel in India and Burmah, and twelve years' work in Calcutta, I recognise that those peculiarities (so manifest to the lay mind as to enable it to label the series of symptoms due to mental fatigue with a special name, and known, I believe, to our missionary friends as *brain-fag*) are the commencing signs of an affection which has got the well known designation of neurasthenia, ?, 'a complex of symptoms, induced by nerve exhaustion, and associated with, if not causing, an alteration in bodily nutrition.'

Amongst Europeans in India it is an affection most worthy of study. It does not directly kill the patient, but it 'hampers' his work, interferes with his career, ruins his temper, upsets his friends, and causes him to be unfit for any position of trust or responsibility."

Predisposing to this type of nerve weakness are the following—The heredity of a neuropathic disposition, emotional disturbances, as worry, anxiety, disappointment, infectious diseases, such as dysentery enteric, influenza, a hustling non-placid disposition, abuse of alcohol—"it is a drug, may be a luxury, never a necessity," continued

moist heat, imperfect metabolism and auto-intoxication caused by bad or insipid food, and the sun's rays

The commonest symptoms are —

Mental — A lack of confidence, tendency to intospection, loss of energy, want of power of concentration, phobias, insomnia

Emotional — Lack of control of feelings, irritability, depression.

Circulatory and Vasomotor — Palpitation, headache, sense of giddiness, sweating

Various Forms of Gastro Intestinal Trouble — Gastroduodenal ulcer, colitis, dysentery, diarrhoea, etc

That is, there was a congeries of mental and sensory disturbances, and signs of defective metabolism were usual in nearly every case. It is a fatigue condition in which one of the most important symptoms, as far as prognosis is concerned, is insomnia. Till sleep returns the patient will not recover."

Sir Havelock goes on to say —

"The light coloured peoples are perfectly fitted to the cold climates, and when they migrate to hot latitudes they are damaged by the conditions to which they are there exposed. This accounts for the fact that though there has been a succession of streams of white races flowing southward to India, they do not there permanently survive as such. For it follows that when a race migrates to a strikingly different climate, it must either conform to the necessities imposed by that climate, or, in time, become extinct. Conforming to the climate will probably mean the preservation of a percentage of strains defective in the primitive qualities, and with a liability to nervous weakness. This liability is the thing transmitted. In India, owing to the conditions of the life being appropriate, neurotic liability is produced.

It is the conditions of life which chiefly determine the destiny of a race through their eventual influence on the mentality. I do not say that climate makes a nation, or a nation's customs, but its limit is and defines and moulds the characteristics in common with the alteration brought about by the food and soil.

To India races have for ages migrated from the most various quarters, have mingled, and have modified themselves under the new conditions. For whether the invaders were white or yellow, the law has held that when dark and light races have been placed in contact, crossing has taken place between them. The foreigners universally have yielded—Yavana, Scythian, Sakas, Yuehchi, and White Hun—to the wonderful assimilative power of Hinduism. They have been absorbed, have taken on the characteristics of the country."

These examples show that for a white race to preserve its purity and predominance in a tropical climate and to keep its characteristic vigour, intelligence and physique fresh waves of immigration are essential. Where are the Turanian invaders of India? The Chinese in Calcutta or in Singapore maintain their excellent qualities by continuous tides of fresh blood from their fatherland. In Egypt no foreign race has ever maintained itself. The fellah of to-day is the fellah of the monuments. Peru is still of the Incas. In Mexico in spite of Spanish and French blood no European race has established itself. Let us again quote Sir Havelock Charles —

"It is true you can to an extent with money enough, and despotic power, rectify insanitary conditions, and banish many of the tropical diseases, but you cannot change the heat, the sunlight, the climatic conditions,

by either the power of money or the power of knowledge. Neither can you settle a stock of people, evolved to suit the environments of northern latitudes, so that they retain their characteristics, in a tropical, or a sub-tropical climate, more than you can cause southern wheat to grow and give its increase on a highland soil.

It can be said that white men of sound constitution can and do live in the tropics, but what of the women and children, and what is the result at the third and fourth generation?

Is the white man plastic enough to take up the conditions of the coloured man, and yet remain white? No, and not without intermarriage will his race survive. His incapacity is based on biological factors his skin and bone, his blood, his brain and cranial capacity, his nutritive processes. Prolonged residence in a high temperature, with little range and high relative humidity, with excess of light, will produce not only physical but mental deterioration associated with anaemia. This is quite apart from the onslaught of any parasitic disease—but the parasitic invasion is rendered easier by the decadence of the victim's vitality.

The success that has followed on the application of science to health problems at Panama—science aided by unlimited capital, and armed with unlimited powers—cannot be cited as applicable to the sanitary conditions of the continent of India. It is questionable even whether in the most advanced coast towns 'Panama methods' could be applied. To the country such action would be economically and politically impossible.

It may be said that the white man should prove as capable of acclimatization in India as in the tropical regions of Australia and America. But in Australia the interesting problem is only on trial, whilst in tropical America the pure white has not colonized—such an one is either a rancher given to stock raising, or, if a cultivator, is as a rule of mixed blood, and therefore not pure white.

The mortality and morbidity in the tropics may be mainly due to parasitism but, apart from this, as I have before said, you have the climatic condition.

In the discussion which followed Sir Ronald Ross emphasises the importance of parasitism in producing disease and we agree with him in his estimate of the health destroying virulence of intestinal troubles such as dysentery or spirochaete. Dr Andrew Balfour with his wide Sudan experience stated that "in the tropics the white man individually can exist, racially he cannot persist." All the speakers commented upon the necessity of frequent change leave every fourth year or even every third. Government regulations in India even admit of this but how few ever get it?

II

ENTAMOEVIC DYSENTERY

THE August issue of the *Philippine Journal of Science* (Vol. VIII, No. 4) is devoted to a complete and valuable monograph on entamœbic dysentery, extracts from which we here reproduce for the benefit of our readers.

It is written by Dr E. L. Walker and A. W. Sellaids and comes from the Manila Laboratory where so much good work on amoebic dysentery has been done —

The prophylaxis of entamœbic dysentery in many, if not most parts of the Tropics has been based upon the

eroneous conceptions concerning the etiologic agent of this disease. In consequence of the cultivation and infection experiments of Kartulis (1891), Celli and Fiocca (1894), Musgrave and Clegg (1904), Noc (1909), Gieig and Wells (1911), Gauduchean (1912), Chatton and Lalung-Bonnaue (1912), and others, together with gross carelessness of investigators in the identification of species of amoeboid organisms, the opinion has been widely held, at least in the Far East, that, if not all amoebae living in water and other external sources are capable of living parasitically in the intestine of man and of producing dysentery, at least the pathogenic species is capable of living and multiplying indefinitely outside of the body of its host. Such a characteristic of *Entamoeba histolytica* would be unique among pathogenic microorganisms, and would, indeed, constitute entamoebic dysentery the most formidable disease of mankind and the least amenable to prophylaxis. Not only the water, but everything in the Tropics, even the air, contains amoebae, motile or encysted in greater or lesser numbers, and efficient preventive measures against this disease would be practically impossible.

On the other hand, the experimental determination that entamoebic dysentery is caused by one species of amoeboid organism only, and that this species is a strict or obligatory parasite which cannot multiply outside of the body of its host, profoundly limits the prophylactic problem of this disease, indeed, reduces it to almost, but not quite, the same level as that of other intestinal infectious diseases, such as bacillary dysentery, typhoid fever, and cholera. Every case of entamoebic dysentery, under these conditions, must arise directly or indirectly from some preceding case of entamoebic dysentery, and the prophylactic problem becomes that of protecting the well from cases of the disease, the sanitary disposal of the dejecta of the diseased, and the detection and treatment of "carriers" of the pathogenic entamoeba.

Every acute case of entamoebic dysentery is constantly passing in his stools in greater or smaller numbers of *Entamoeba histolytica*, but in dysenteric stools the amoebae are all in the motile stage, in which they are probably less resistant to external influence than any other intestinal organisms. They not only will not live, but even disintegrate within a few hours after being passed in the feces. It is also probable that in this stage they are incapable of surviving passage through the normal stomach, but are destroyed by the acidity of its contents. Of the 4 men who ingested the motile *Entamoeba histolytica* in my experiments, 3, or 75 per cent, became infected, but these infections were secured under the most favourable circumstances, large numbers of the organism being ingested, together with magnesium oxide to neutralize the acidity of the stomach. It is unfortunate that some of these men were not fed the amoebae without neutralizing the acidity of the stomach contents, in order to determine experimentally the possibility of infecting with the motile stage under natural conditions. Darling (1913) states that infections invariably fail when only the motile (trophozoite) stage of *Entamoeba histolytica* is fed to kittens. Shirota (1912) makes a similar statement as a result of his experience. The purpose of my experiments is performed was to obtain parasitization and to secure the most favorable conditions possible for infection with any other organisms that, associated with the amoeba, might be an etiologic factor in producing dysentery. In consequence of the extremely feeble resistance of the motile *Entamoeba histolytica* to external influences, it is not considered that cases of acute entamoebic dysentery are an important source of infection.

CONCLUSIONS

This investigation was undertaken to determine experimentally the etiologic relationship of different species of amoeboid organisms to endemic tropical dysentery. It has consisted of 60 feeding experiments with the different species of amoebae and Entamoebae that have been implicated in the production of this disease.

These experiments differ from those hitherto performed (1) in the number of comparative tests made of different species, (2) in that the experiments have been more carefully controlled and specially in that the species of amoeboid organism fed to, and recovered from, the experimental animal in every case have been determined, and (3) in the fact that the experiments have been made not upon the lower animals but upon man.

A Twenty feedings of cultures, representing 13 strains and 8 species of Amoeba, isolated from the Manila water supply and other non parasitic sources, from the stools of healthy persons or persons suffering from diseases other than dysentery, and from dysenteric stools, have been given to 10 different men, with the following results —

1. The Amoeba, when ingested by men, can usually be recovered in cultures from their stools on Musgrave and Clegg's medium during the first few days after feeding, but never subsequently.

2. Microscopic examination of the stools of men after ingesting cultures of amoebae have been invariably and constantly negative.

3. None of the men who ingested cultures of amoebae have developed dysentery.

4. Therefore, the following conclusions appear to be warranted —

(a) The cultivable amoebae are incapable of living parasitically in the intestinal tract of man.

(b) The amoebae, when obtained in cultures from stools, intestinal contents, or liver abscess pus, are derived either from cultural contaminations or from encysted amoebae which have been ingested with water or food and have passed unchanged through the intestinal tract.

(c) The cultivable amoebae are non-pathogenic, and consequently play no rôle in the etiology of endemic tropical dysentery.

B Twenty feedings with 5 strains of *Entamoeba coli* have been given to 20 different men with the following results —

1. Cultures on Musgrave and Clegg's medium of the stools of men who have ingested *Entamoeba coli* have been invariably negative.

2. On the other hand, *Entamoeba coli* has been found microscopically, after a short incubation period, in the stools of every man who became parasitized, and the amoebae have persisted in the stools of these men for an indefinite time.

3. Of the 20 men who ingested *Entamoeba coli*, 17 became parasitized at the first feeding and 3 who did not become parasitized were reserved as controls.

4. The incubation period of *Entamoeba coli*, as determined by these experimental parasitizations, varies from one to eleven days, with an average of 4.7 days.

5. None of the 17 men experimentally parasitized, nor the 3 non-parasitized controls, have developed dysentery.

6. From these results, the following conclusions appear warranted —

(a) *Entamoeba coli*, unlike the Amoeba, is a strict or obligatory parasite and cannot be cultivated on Musgrave and Clegg's medium.

(b) *Entamoeba coli* is non-pathogenic, and consequently plays no rôle in the etiology of endemic tropical dysentery.

Twenty feeding experiments with *Entamoeba histolytica* have been made on 20 volunteers, with the following results —

1. Cultures on Musgrave and Clegg's medium of the stools of men who have ingested *Entamoeba histolytica* have been invariably negative.

2. Microscopic examinations, on the other hand, have shown *Entamoeba histolytica*, after a short incubation period, in the stools of every man who became parasitized, and the amoebae have persisted in the stools of these men for an indefinite time.

3. Of the 20 men who ingested *Entamoeba histolytica*, 17 became parasitized after the first feeding, 1 required

3 feedings before becoming permanently parasitized, and 2 who did not become parasitized at the first feeding were reserved as controls.

4 The incubation period of *Entamaba histolytica* in these experimentally parasitized men has been from one to forty-four days with an average of nine days.

5 In these experiments it has been possible to obtain —

(a) Encysted "Entameba tetragena" exclusively in the stools of men who had ingested motile *Entamaba histolytica* only.

(b) Motile *Entameba histolytica* exclusively in the dysenteric stools of men who had ingested "tetragena" cysts only.

(c) An alternation of "tetragena" cysts and motile *Entameba histolytica* several times repeated in the stools of a man who had ingested "tetragena" cysts only and having attacks of dysentery alternating with normal stools.

6 Of the 18 men experimentally parasitized with *Entameba histolytica*, 4, or 22.2 per cent have up to the present time developed entamoebic dysentery.

7 The incubation period of the dysentery in these experimental infections has been twenty, ninety-five, eighty-seven, and fifty-seven days, respectively, with an average of 64.8 days.

8 No cases of dysentery have developed in men who ingested *Entameba histolytica* from an acute case of entamoebic dysentery, from a liver abscess, nor in the 2 men who ingested *Entameba histolytica* but who did not become parasitized with the entamoeba.

9 All of the experimental dysenteries have been obtained after ingesting *Entameba histolytica* from normal stools of "carriers". In 2 of the cases the infection was from "contact carriers" who had not, and have not subsequently, developed dysentery, and in one of the latter cases three hundred seventy-one days and the passage through 2 "contact carriers" intervened between the case of natural and the case of experimental entamoebic dysentery.

10 No cases of spontaneous entamoebic dysentery have occurred in this ward during the period of these experiments.

11 In consequence of the results obtained in these experimental infections of men with *Entameba histolytica*, the following conclusions appear warranted —

(a) *Entameba histolytica*, like *Entameba coli* and in contrast to the *Ameba*, is a strict or obligatory parasite and cannot be cultivated on Musgrave and Clegg's medium.

(b) "Entameba tetrageni" Viebeck is identical with *Entameba histolytica* Schaudinn and "tetragena" cysts are developed in the life cycle of *Entameba histolytica*.

(c) The large percentage of latent infections obtained in these experiments is wholly consistent with our clinical and pathological experience with entamoebic dysentery.

(d) *Entameba histolytica* is the essential etiologic factor in endemic tropical dysentery.

D Information believed to be of the greatest value for the diagnosis, treatment, and prophylaxis of entamoebic dysentery has been obtained in this experimental investigation.

1 Since it has been determined that *Entameba histolytica* is the specific etiologic agent, it will be possible to make an accurate laboratory diagnosis of entamoebic dysentery.

2 The distinction between the pathogenic *Entameba histolytica* and the harmless *Entameba coli* having been established, there will no longer exist an excuse for the indiscriminate treatment of all persons who show entamoebae in their stools.

3 The relatively long incubation period of this disease and the ability to diagnose latent infections make it possible to anticipate with treatment an attack of entamoebic dysentery.

4 Since there is evidence that ipecac treatment, which is very efficient in relieving attacks of entamoebic dysentery and causing the entamoebae to disappear

temporarily from the stools, does not always kill all of the entamoebae in the intestine, treatment should always be controlled by stool examinations for *Entameba histolytica*. By this precaution, relapses, so common in entamoebic dysentery, can be forestalled.

5. The following data have been acquired upon which to base a rational prophylaxis of entamoebic dysentery —

(a) *Entameba histolytica* is the essential etiologic agent in the disease.

(b) The specific entamoeba is an obligatory parasite, and cannot propagate outside of the body of its host.

(c) The motile forms of this entamoeba, which are passed in the bloody mucous stools in acute dysentery, quickly die and disintegrate and are probably, under natural conditions, incapable of withstanding passage through the human stomach.

(d) In consequence of the relatively long incubation period of entamoebic dysentery, the prevalence of chronic and latent infections and the frequent failure of treatment to kill all of the entamoeba in the intestine, "carriers" of *Entameba histolytica* are common in endemic regions.

(e) These "carriers" are constantly passing in their stools large numbers of the resistant, encysted stage of *Entameba histolytica*.

6. These facts make it probable that "carriers" of *Entameba histolytica* constitute the chief, if not the sole agents in the dissemination of entamoebic dysentery.

7. Prophylactic measures should, therefore, be directed toward "carriers" of *Entameba histolytica*, and should include the following —

(a) The identification of "carriers" of *Entameba histolytica* by the microscopic examination of the stools of convalescents, household servants, and other suspects or persons whose employment or associations make them particularly dangerous to the public health.

(b) The sanitary disposal of faeces.

(c) The treatment, controlled by microscopic examination of their stools, of all "carriers" of *Entameba histolytica*.

8. Since the incubation period of entamoebic dysentery is usually long and latent infections are common, the most efficient personal prophylactic measure is frequent stool examinations, as an index for treatment, of all persons residing in endemic regions.

Correspondence.

SIR WM OSLER & THE ENGLISH F R C S

To the Editor of "THE INDIAN MEDICAL GAZETTE"

SIR,—Can you let me have the figures quoted by Sir William Osler recently on this Examination for the English F R C S

Youis, etc,
FIRST HALF

[We quote the following extract from Sir Wm Osler's Introductory Address at St George's Hospital, on 1st October — "All regret that in London only the select and the elect attempt to get the degree of their own University. And it is difficult! Twice in the past five years more students have failed than have passed the final subjects for the M B. The total figures for the period are of 1,061 candidates examined 481 were rejected, a percentage of 41.01. And, lastly, to one other qualification, greatly prized, sought only by the very best men, the Olympic athletes of their classes, I will refer—the F R C S Eng. Consider, please, how carefully this group is trained—only the very best venture to compete, and they have a diet of which the intellectual calories are gauged with surpassing accuracy. There is no doubt they are our very best the picked steeplechasers of our stables. How do they fare? I am almost ashamed to read the figures. Your ears have tingled already, but only those hardened by familiarity will not be shocked at the demonstration of such a chasm between education and examination. Of 1,186 men who have tried for the

primary Fellowship examination of the Royal College of Surgeons during the past five years 821 were rejected, 6945 per cent. Of 680 men at the final Fellowship examination, 294 were rejected, 43.23 per cent. The high watermark of examination futility was reached in May, 1912 when of 118 candidates for the primary Fellowship only 31 were approved. These are picked men, our very best students, the most carefully prepared, who rarely attempt the trial without months of extra study and attendance upon grinding classes. Of the ploughed I have known personally many seem to have been over trained, others had spent their time in unprofitable original research, but all, passed and plucked alike, I maintain are of the highest type of our students, whose calamities proclaim to the world the break down of our present educational system.

At the last examination for the primary, Nov. 1913 there were rejected 66 per cent of candidates.—ED., *I M G.*

TWO CASES OF RELAPSING FEVER

To the Editor of "THE INDIAN MEDICAL GAZETTE"

SIR,—As Relapsing Fever has become more prominent during the current year and has already been the subject of several articles in your paper, the record of two more cases may be of value more especially to those officers who are investigating this apparently new disease.

Two Riflemen of the 2/10th Gurkha Rifles recently went into Eastern Nepal upon recruiting duty and returned on October 14th to Ghoom Recruiting Barracks. Both men had slight fever which they made light of, for which reason they were not definitely struck off duty until the 17th and 23rd, respectively. They remained at Ghoom until the 29th, during which period I have unfortunately been unable to obtain any records of their cases. They were then admitted to the Battalion Hospital at Takdah.

The condition of Rifleman B., who first went sick, was as follows—Temperature 104, Pulse 98, Respiration 36, great weakness and voice almost lost, tongue dry very red with small discrete furuncles at the sides posteriorly and bowels constipated. The main symptoms were enlargement of the spleen by two inches, excessive tenderness over the liver and spleen, great distress from pains in the bones and abdomen. Slight icterus was present. Spirochaetes were found in abundance in the blood.

This condition prevailed along with unfeasted symptoms and a temperature fluctuating between 102 and 103, until the 29th, when a severe collapse ensued at this crisis.

Immediately following this the spirochaetes disappeared from the blood, the spleen receded within thirty six hours, and all pain departed. His condition for several days was one of very extreme weakness with sub normal temperature, but recovery occurred eventually without further relapse.

I imagine from his own story that the fever watched by me, was a relapse of the initial fever contracted on the 13th.

The second case, Rifleman J., presented even severer symptoms. In addition to the above, he was also attacked by constant hiccupping with every fourth or fifth breath and fairly severe hematuria (the latter in keeping with the tendency in this disease to hemorrhage from mucous membranes but a type hitherto unrecorded, I think). Emaciation was very extreme.

This man had no fever on admission and no spirochaetes were present in the blood, but owing to the coincidence and similarity of the two cases he was diagnosed as the same disease. A relapse occurred on the 29th and spirochaetes were shortly found in great abundance in every field of the microscope. Four days of great agony, which morphine did little to alleviate, terminated in death.

The points about this case which struck me, were that during the apyrexial period the body pains had not abated, and the mind was almost unconscious, but when the fever rose, his intelligence cleared. This was in direct opposition to what I noticed in the first case.

Treatment was carried out on general lines, i.e., alleviation of symptoms and elimination of toxins. Salvarsan injections were contemplated but omitted owing to the grave condition of both patients. A sonic by the mouth in the latter case was also considered inadvisable owing to the hiccupping, which all ordinary remedies had failed to check.

The spirochaetes tallied exactly with the morphological descriptions given by Captains Smith Townsend and Jukes, i.e., *Mycoplasma* was found, resembling *Sp. duttoni* and there was nothing morphologically to distinguish them from the latter or *Sp. carri*. On one slide I observed several forms which appeared to show longitudinal division or possibly conjugation.

The differential blood counts showed nothing distinctive.

Yours, etc.,

E R ARMSTRONG, LIEUT., I M S,
Officer Medical Officer, 2/10th G R

CARRIERS IN ANKYLOSTOMIASIS

To the Editor of the "INDIAN MEDICAL GAZETTE"

SIR,—In stating, in my recent paper on "Ankylostomes and Ankylostomiasis in Bengal," that in America the treatment of carriers does not seem to have arisen and that possibly their presence is not suspected I must have made a misstatement. In the Report for 1910 of the Administrative Society to the Rockefeller Sanitary Commission for the Eradication of Hookworm Disease the following occurs—"The North Carolina State laboratory has just completed an examination of 5,556 people taken by groups without reference to clinical symptoms. These people are College students, soldiers, orphans, public school children of all ages and conditions. The records show that of the 5,556 persons, 2,408, or 43 per cent are infected."

Darjeeling, }
23rd December 1913 }

Yours, &c.,
CLAYTON LANE, M.D.,
MAJOR, I M S

MOSQUITO MALARIA HYPOTHESIS ANOTHER LINK IN THE CHAIN OF ITS HISTORY

To the Editor of "THE INDIAN MEDICAL GAZETTE"

SIR,—In his Presidential Address, before the Linnean Society of London, 1913, Prof E B Poulton, F.R.S., deals *in extenso* with two lectures that are stated to have been delivered by Mr Geo W Sleeper in the United States of America (actual place of delivery not mentioned) and published by "Wm Beuse, Printer, Boston, 1849."

The following is an extract from the second of these lectures—

"XI. *Insects as Carriers of Disease, Malaria and the Mosquito, the House Fly*

Careful observation has led me to perceive that many of our common insects are conveyors of the germs of illness, disease, and death. The house fly that crawls over our food or drowns itself in our drink, the gnat that buries its lancet in our veins, the bed bug that attacks us cleanly during the slumbers of the night, the wasp and the bee that thrust with their stings—are all transporters, injectors or introducers of germ life.

"My reasons for assuming this are briefly comprised in the statement that I have never known a person suffer from malarial fever that had not at one time or other been stung by gnats or been the resident of a region containing these pests, and that anyone can appreciate the too palpable filthiness of the fly, feeding, crawling, rioting and breeding in the loathsome repellentness of refuse, offal, and decaying abominations of every conceivable kind, then alighting on our victims or on our persons to trail his desecration over our absorptive epidermis" (pp 31, 32)

"XII. *The exclusion of house flies, the utilization of natural enemies*

I suggest that wooden frames be covered with metal gauze such as is used for sieves, and hinged on outside of doors and windows, otherwise with free access to your houses that can be safe from the fly. How to accomplish this (the extermination of the fly), and also annihilate the swarms of ticks, fleas, gnats, bed bugs and so forth is indeed a question. Of course cleanliness will affect something towards the desired end, but, perhaps, more than this may be called into play may be other creatures can be bred that may abate the numbers of these vermin, just as the mongoose is used by the Hindu to destroy the Cobra di Capello, as the ferret is set upon the rat in England and the ladybird is said to be employed in the south of Europe to exterminate the larva of various insects that prey on the poor peasant's scanty crops" (pp 32, 33)

These two lectures deal with such abstruse subjects as—the origin of life, spontaneous generation, the germinal theory of disease, contagion, cultivation of germs from a diphtheritic throat, resistance, suggestions regarding the functions of phagocytes, etc.

The authenticity of these two lectures is now being closely inquired into, and if proved will indicate that Mr Geo W Sleeper was a man of phenomenal acumen and prescience and that he anticipated in theory what has been practically demonstrated in a score of ways, it will add another link to the chain in the history of the epoch making mosquito malaria discoverer.

POONA, }
22nd Dec., 1913 }

W HEHIR, COLONEL, I M S,
ASST DIR, MEDICAL SERVICES,
Gth (Poona) Division

THERAPEUTIC AND LITERARY NOTICES

APART from their therapeutic use in many other affections oxygen baths are recommended in neurasthenic conditions, mild forms of nerve exhaustion, overwork, etc.

The beneficial action displayed by these baths is apparent in the feeling of well being experienced by the patient during and after the bath, while the pulse becomes slower and fuller, and on continuing this treatment usually a gradual improvement in the other subjective symptoms will follow.

To prepare an effective Hemin Oxygen bath it is imperative to employ a really reliable solution of hydrogen peroxide of definite strength. Merck's solution of hydrogen peroxide is particularly recommended for this purpose owing to its high degree of stability.

Protect the bottles from light and keep in an upright position and cool place.

Directions for preparing a Hemin Oxygen Bath

Pour the contents of the larger bottle (solution of hydrogen peroxide) into the bath containing as much water as will cover the bather up to the neck, the temperature of the water being 85°-90° F. Then dissolve the 5 c.c. of Hemin contained in the aluminium capsule in about a pint of water and add to the bath whilst agitating the water.

After about 10 minutes the production of oxygen will be in full swing and the bath ready for use. The evolution of oxygen lasts for about half an hour.

The Calcutta Agents are Messrs Martin and Harris, 8, Waterloo Street.

MR MARK C RIMMER, the Managing Director of the Holborn Surgical Instrument Co, London, is on a visit to India and has brought with him a large collection of the most up to date Instruments which he intends exhibiting in the principal towns in India.

This Company's Instruments have a large sale in India as they are of excellent quality and the prices are most reasonable.

Mr Rimmer has brought with him the latest Instruments for the administration of "Salvarsan," including the military apparatus which he has supplied through the India Office to most of the Station Hospitals here—he also has a large assortment of Instruments for the eye, ear, nose, throat, bladder, abdomen, &c.

Should any of our readers wish to communicate with Mr Rimmer, letters addressed to him C/o Gleadlay & Co, Calcutta, or Bombay, will be duly handed to him.

THE firm of BUTTERWORTH & CO (INDIA), LTD, will shortly publish two important new works on GYNAECOLOGY and OBSTETRICS. They are DISEASES OF WOMEN by C A L Reed, M.D., Professor of Clinical Gynaecology, University of Cincinnati, U.S.A. 820 pages 450 illustrations Price Rs 18 12 net. This new book is devoted to practical matters discussed from medical and surgical standpoints.

The other work is A MANUAL OF OBSTETRICS AND GYNAECOLOGY by John Osborn Polak, M.D., Professor of Obstetrics and Gynaecology in the Long Island College Hospital, U.S.A., etc., etc. There are three coloured plates 119 text illustrations 468 pages Bound in flexible leather Price Rs 9 6 net. This work places before the practitioner and student, clearly and consecutively the essential facts and practices of the obstetric art.

Amongst other new medical publications issued by this firm which now holds a very large stock of recent English and American medical publications in India are—

DISTURBANCES OF THE VISUAL FUNCTIONS by Prof W Lohmann, Chief Physician in the University Eye Clinic, Munich. This volume has been translated by Angus Macmillan, M.B., F.R.C.S., Ophthalmic Surgeon to King Edward VII Hospital, Windsor. 39 illustrations, some in colour. 194 pages Price Rs 11 4 net.

TUBERCULIN IN DIAGNOSIS AND TREATMENT by Dr Bandelier and Dr Roepke Second English Edition Translated from the seventh revised and enlarged German Edition Illustrated Price Rs 11 4 net. This is a text book of the Specific Diagnosis and Therapy of Tuberculosis for Practitioners and Students. Its popularity in Germany is evidenced by the fact that seven editions have been called for in five years.

TROPICAL MEDICINE AND HYGIENE by C W Daniels, M.D., Late Lecturer on Tropical Diseases, London Hospital, formerly Director, Institute for Medical Research, Federated Malay States, etc., etc. Second Edition, PART I, DISEASES DUE TO PROTOZOA. Illustrated Price Rs 5 10 net (Butterworth & Co, Calcutta).

Service Notes

150TH ANNIVERSARY, I.M.S.

THE public dinner to commemorate the 150th Anniversary of the regular institution on 1st January 1761 of the Indian Medical Service was held on 14th January 1914 at the United Service Club, Calcutta. Surgeon General Sir Purdey Lukis, K.C.S.I., presided. Several guests including the Chief Justice, the Archbishop and the Bishop of Calcutta, Genl Sir R Scovell, General May and others, owing to absence from Calcutta, were unable to attend, but His Excellency Lord Carmichael, Hon'ble Sir Wm Duke, M.P., P.C., Lyon, I.O.S., Nawab Shams ul Huda, Hon'ble Mr Stevenson Moore, I.O.S., Hon'ble Mr H. L. Stephenson, I.O.S., represented the Government and the Civil Service, Mr F. H. Stewart and Hon'ble Mr G.ice represented Commerce and Industry, Dr Caddy Dr Hossack and Dr Kennedy and Mr Hardy Taylor represented the local non service medical profession, Dr Helon represented, London and Harley street, Surgeon General Sir A. T. Sloggett and Lieutenant Colonel Cooper really represented the Sister Service.

The following is the list of Indian Medical Service officers present—

Hon'ble Surgeon Genl Sir C Purdey Lukis, K.C.S.I., F.R.C.S., Hon'ble Colonel G. F. A. Harris, O.S.I., F.R.C.P., Colonel G. W. P. Dennis (C.P.), Lieutenant Colonel H. E. Banatwala (Assam), Lieutenant Colonel F. J. Drury (B and O), Lieutenant Colonel W. D. Sutherland, M.D., Lieutenant Colonel G. Giffard, C.S.I., Lieutenant Colonel C. R. M. Green, F.R.C.S., Lieutenant Colonel E. C. Hale, Lieutenant Colonel Harold Brown (retd.), M.D., Lieutenant Colonel J. G. Jordan, M.B., Lieutenant Colonel F. P. Maynard, F.R.C.S., Lieutenant Colonel W. J. Buchanan, C.I.E., M.D., Lieutenant-Colonel A. R. Anderson, M.B., M.R.C.P., Lieutenant Colonel J. T. Calvert, M.B., M.R.C.P., Lieutenant Colonel I. C. S. Vaughan, M.B., Lieutenant Colonel B. J. Singh, Lieutenant Colonel F. O'Kinealy, Lieutenant Colonel B. H. Deare, M.R.C.P., Lieutenant Colonel R. Bud, C.I.E., M.V.O., I.R.C.S., Lieutenant Colonel E. R. Pally, M.B., Lieutenant Colonel C. R. Stevens, M.D., F.R.C.S., Lieutenant Colonel E. A. R. Newmnan, F.R.C.P., F.R.C.S., M.D., Lieutenant Colonel E. A. R. Newmnan, M.D., Lt Col J. J. Gould, M.A., Lt Col J. Mulvaney, Major T. A. Granger, M.B., Major C. H. Bensley, Major C. M. Mathew, Major John Stephenson, M.B., F.R.C.S., Major E. E. Waters, M.D., M.R.C.P., Major W. W. Clemesha, M.D., D.P.H., Major R. P. Wilson, F.R.C.S., Major F. A. L. Hunnington, Major Peter Dee, M.B., Major J. G. P. Murray, M.B., F.R.C.S., Ed., Major J. W. F. Kait, M.B., Major J. O. Holdich Leicester, M.D., M.S., F.R.C.S., Major E. D. W. Greig, M.D., Major W. F. Harvey, M.B., Major J. W. D. Megaw, M.B., Major E. O. Thurston, F.R.C.S., Major T. G. N. Stokes, M.B., Major M. H. Thoinley, M.B., Major M. Mackelvie, M.B., F.R.C.S., Ed., Major W. G. Hamilton, D.P.H., Major R. McMurison, M.D., Major R. B. Foster, M.D., Major R. E. Lloyd, D.Sc., Capt F. A. F. Birnardo, M.B., F.R.C.S., Ed., Capt L. B. Scott, M.D., Capt J. Hay Burgess, M.D., F.R.C.S., Capt W. Gillitt, M.D., Capt F. H. Stewart, M.L., Capt A. H. Proctor, M.D., Capt A. S. M. Peebles, M.B., Capt A. Denham White, M.B., Capt John Cunningham, M.B., Capt C. A. Godson, Capt W. H. Hume, M.B., Capt W. L. Harnett, M.B., F.R.C.S., Capt J. D. Sandes, M.B., Capt V. B. Green Armytage, M.D., Capt J. A. Shorten, M.B., Capt R. B. Lloyd, M.B., Capt A. M. Jukes, M.D., Capt T. L. Bowfoid, M.B., Capt N. H. Bhattacharya and Lieut J. C. Dey, M.B.

The menu was printed in the service colours with the crest and the dates 1761-1914 and below a literal copy of the old order of 20th Oct 1763, constituting the Service from 1st Jan 1764. The first toast of course was the King Emperor, after which Sir Purdey Lukis, the Director General, rose and made a fine speech from which we quote the following extracts—

The Chairman in proposing the toast, "Prosperity to the Indian Medical Service," said that in accepting the honour of presiding at such an important and auspicious occasion he felt he was usurping honours that should fall to the lot of another officer present. Many of them might be aware that in 1772 there was a distinguished officer of the Madras Medical Service named H. Harris. He was the Senior Presidency Surgeon and President of the Medical Board at Fort St George, and an oil painting of him now hangs in the hall of Government House at Madras. The formal minutes of Oct 20th, 1763, constituting the Indian Medical Service from January 1st, 1764, were printed on then menu cards, and showed that they were 150 years old, on the first of the month—a very respectable and even venerable age, but they could go back much further than that, for they knew that from the time when the English first began to trade with this country, there were medical officers in the service of the East India Company. Amongst those early surgeons the

names of Boughton, Hamilton and Holwell stood out pre-eminently. Time would not allow of his discussing the question as to whether the medical skill of the two first mentioned officers was, or was not, an important factor in securing for the East India Company a footing in the country. The subject upon which he should like to speak that night was, what the I M S. had done for India in the past, what it is doing in the present and what he sincerely hoped it would do in the future. They should remember that no service could live merely upon its traditions. They must prove that they are doing more work now than they did in the past, and that they hoped to do better still in the future. He thought they certainly could do so, and if anyone doubted it he could consult the accounts of their medical and surgical work in the medical journals. They could visit their research institutes medical colleges, and schools, and their magnificent hospitals. Let them reflect upon the reduction in the mortality in their jails, the improvement in the health of the sepoys of the native army the steady advance in sanitation that had been so conspicuous a feature during the last decade.

Finally, the important discoveries for the relief of human pain and suffering that had been made in recent years by officers of the I M S. was strong evidence of the benefits they had conferred upon the country of their adoption * * *

The Director General then went on to say that in view of all that had been done by the I M S. in and for India in old days and up to the very present he had a right to protest with the greatest possible emphasis against the "unfair and untrue misrepresentations made against the service recently in another place." He hoped that when officers were on leave and visiting the medical schools at home that they would show clearly to the students that the I M S. still possessed many attractions and that within the past few years much had been done to get rid of the proposal to limit the work and the uses of the service.

He said that he was far from believing that the service was a decadent one, he believed that 50 years, yes 150 years, hence their descendants would still be celebrating the Indian Medical Service, and he said he could not propose the toast of prosperity to the service better than in the following words of a telegram just received from Madras—*Indian Medical Service, Madras, greet Director General and Indian Medical Service in Calcutta. We drink with you prosperity, long life and renewed popularity for the glorious service*

The Director General's remarks and especially his emphatic protest against unfair aspersions and misrepresentations were received with loud applause. Shortly after (owing to the absence of Colonel G F A. Harris, due to an attack of flu) and at Colonel Harris' request Lt Col W J Buchanan proposed the toast of the guests coupled with the name of His Excellency the Governor of Bengal.

Lord Carmichael replied in a characteristically humorous speech in which he marvelled at the versatility of the service and wished it well prosperity. Lt Col Bud then proposed the healths of Lt Col Buchanan and Capt Green Armytage, the organisers of the dinner, which gave Lt Col Buchanan an opportunity of referring to the splendid historical work done in the service by Lt Col D G Crawford, now retired. Lt Col Crawford's health was duly drunk and Capt Green Armytage returned thanks on behalf of the ladies, who had worked so hard to decorate the tables.

Another telegram of congratulations and wishes for prosperity was received from Quetta. Another I M S. dinner will be held at Lucknow, under Colonel Manifold at the end of January.

Colonel Dennis on first hearing of the 150th Anniversary commemoration to be held in Calcutta at once decided to join forces with the Calcutta Dinner Committee and not only came himself, but brought several of his officers with him from the Central Provinces, thus materially aiding the commemoration by what has proved to be one of the largest and best attended dinners ever given by the I M S.

A word of thanks is due to the Committee of the United Service Club for giving the use of their rooms, and to Messrs Thacker Spink & Co. for the admirable and artistic way they produced the Dinner Menu.

NEW YEAR'S HONOUR LIST

THE medical services and profession in India do not take a great share in this rather short list. At the head of the list comes the Knighthood for Dr T B Nariman, of Bombay, and for Surgeon General A T Sloggett, C B, C M G., the Hon'ble Major J C Robertson, Sanitary Commissioner with the Government of India, gets the C I E.—and Surgeon General Hathaway, A M S. the C B Medical Missionaries is usual appear on the list of Kaiser-i-Hind Medallists, e.g., Dr W Stokes of the German Mission, Madras, Dr M B Carleton, well known for his work among lepers at Sabathu, get the gold medal, Dr C H S Hope of Purni Mission gets the silver medal, as also does senior Sub Assistant Surgeon Mahomed Khan of the 24th Punjabis, Military Assistant Surgeon J J Macdonald, Miss J Miller of the St. Stephen's Hospital, Delhi, and Sister Anastasius,

of the Cuttack General Hospital, and Dr Agnes Henderson gets the bar to the Kaiser-i-Hind silver medal, among the Rai Bahadurs we find the names of Rai Salib N O Sen, the popular Medical Officer of the Victoria Hospital, Darjeeling, Assistant Surgeon Chandra Mohan De, L M S., of the Agra Medical School, Assistant Surgeon B K Roy, of Ajah, Sub Assistant Surgeon Din Dival, of Simla, Rai Salib V C Pillai, of Burmese, among the Khan Sahibs are the names of Shaik Ahmed, Shaik Abdulla, of Rangoon, Munshi Edu Baksh, of Assam, and Muhammad Khan, Punjab, and Jahangir Baksh, among the Rao Bahadurs we find Rai Salib V C Pillai, (Burmese), and T V A Mudelai, of the Victoria Hospital, Bangalore, among the Khans Bahadur we find Assistant Surgeon E S Bhaucha of Poona, Mouli Shrik Alahi Baksh, of Chittagong Hill Tracts. Among the Rai Sahibs we find Sub Assistant Surgeon Lala Hem Ray, of Punjab, retired Sub Assistant Surgeon Ajun Mahanti, of Sub Assistant Surgeon Gurdit Singh, of Bharatpuri. The title of Rao Sahib has been conferred upon V V Avargal, Assistant Medical Officer, S Canara, in the Jail Department Mokhan Lal, Jailor, Bareilly, gets Rai Bahadur, and B Guru Chuan Datt, Jailor of Bareilly, becomes a Rai Sahib. The title of Vaidyaratna is given to T D Avargal, in "Ayurvedic physician," of Malabar. The title of Ahmadza Zaung Tazeikya Min as a personal distinction is conferred on Sub Assistant Surgeon Maung Shwe Chein in Burma, among the military honours is the Order of British India with the title of Bahadur to 1st class senior Sub Assistant Surgeon Sohail Singh, Rai Bahadur.

SURGEON MAJOR DANIEL ROBERT THOMPSON, Madras Medical Service, retired, died on 12th July 1913. He was educated at Madras, and entered the Subordinate Medical Department as Assistant Apothecary on 28th April 1855. Resigning after some five years' service, he went to England, took the M D St Andrews, in 1860, and the M R C S in 1861, and entered the I M S as Assistant Surgeon on 1st April 1867, becoming Surgeon on 1st July 1873, Surgeon Major on 1st April 1879, and retiring on 14th May 1888. His first nine years' service was spent in military employ, in the 22nd, 16th, and 21st Madras Native Infantry successively. In 1870 he was appointed Surgeon of the Fust District, Madras and Medical Inspector of Emigrants. On January 1st 1879, he received the C I E for famine work in the Madras famine of 1877-78. The Army List assigns him no war service. He was the author of a *Treatise on Vaccination*, published at Madras in 1864.

LIEUTENANT COLONEL WILLIAM HENRY GREGG, Bengal Medical Service, retired, died in London on 6th November 1913. He was born on 3rd January 1845, educated at Trinity College, Dublin, where he took the M B and B Ch in 1869, subsequently taking the Sanitary Science Certificate at Cambridge in 1886 and the M R C P London, in 1887. He entered the I M S as Assistant Surgeon on 1st October 1869, becoming Surgeon on 1st July 1873, Surgeon Major on 1st October 1881, and Bugade Surgeon Lieutenant Colonel on 20th June 1891, and retired on 4th December 1899. He served in the N E Frontier in the Lushai Expedition of 1871-72, and received the medal and clasp. On his return he took up Civil employment in Bengal, was Civil Surgeon of Dinajpur in 1873 of Hughli, from 1877 to 1886. Protector of Emigrants in 1886. Sanitary Commissioner of Bengal from 1889 to 1895, and Civil Surgeon of Burdwan from 1896 to 1899. He was the author of a *Text book of Botany for Indian Schools*, published by Thacker, Spink & Co., Calcutta, in 1883.

SURGEON MAJOR WILLIAM SMITH CALDWELL, Bengal Medical Service retired, died at Stranraer on 21st September 1913. He was born on 10th April 1833, educated at Glasgow University, where he took the M D in 1854, and also the L R C S at Edinburgh, and entered the I M S as Assistant Surgeon on 29th January 1857. He became Surgeon on 29th January 1869, and Surgeon Major on 1st July 1873, retiring on 4th July 1881. His name was originally William Caldwell Smith, but in 1875 he changed it to W S Caldwell, during the Indian Mutiny he served in 1857-58 with Colonel Cotton's force in the Sonthal, Gaya, and Pilmara districts of Bihar, and with the Rohilkund Field force from June 1858 to August 1859.

LIEUTENANT COLONEL JOHN WILLIAM RODGERS, Bengal Medical Service, retired, died on 26th September 1913. He was born on 3rd September 1856, educated at Edinburgh University, took the L R C S and L R C P at Edinburgh in 1880, and entered the I M S as Surgeon on 2nd April 1881. He became Surgeon Major on 2nd April 1893, Lieutenant Colonel on 2nd April 1901, was placed on the selected list on 10th April 1908, and retired with an extra compensation pension on 5th July 1911. His whole service was spent in military employment. He served on the North West Frontier of India in the Hazara Expedition of

1888, receiving the medal and clasp in the Relief of Chitral in 1895 medal and clasp, and in East Africa in 1903-04, in the operations in Somaliland, gaining a third medal and clasp.

COLONEL JOHN HENRY NEWMAN, Bengal Medical Service, retired died at Coolta, Killinardrish, County Cork, on 30th November 1913. He was born on 9th December 1844, educated at Queen's College, Cork, took the M.B. and M.Ch. in the Queen's University of Ireland in 1865, and entered the I.M.S. as Assistant Surgeon on 30th September 1867. He became Surgeon on 1st July 1873, Surgeon-Major on 30th September 1879, Brigade Surgeon Lieutenant Colonel on 1st June 1892, and Colonel on 29th March 1895, retiring on 14th July 1900. Most of his service was spent under the Foreign Office, in Political medical employment. In 1879 he was appointed Medical Officer of the Mahratta Battalion, now the 44th Mahratta Infantry, and Civil Surgeon of Ajmud. In 1892 he became Agency Surgeon for Rajputana, and A.M.O. of that Agency, a post in which he had previously officiated in 1881 and 1889. On promotion to administrative rank he was posted to the Central Provinces on 29th March 1895, and in November 1897 became I.G.C.H. in Bengal, leaving that post for that of A.M.O. of the Punjab Frontier force in April 1898. His war services comprise Abyssinia, 1868, medal, and Afghanistan, 1878-79, the two Bazar Valley Expeditions, medal. On 1st April 1900 he received a good Service Pension.

LIEUTENANT COLONEL WILLIAM HENRY GRAY, Bengal Medical Service retired on 24th October 1913. He was born on 13th September 1863, educated at Aberdeen where he took the degrees of M.B. and C.M. in 1886, and joined the I.M.S. as Surgeon on 31st March 1888, becoming Major on 31st March 1900, and Lieutenant Colonel on 31st March 1908. His first eight years were spent in military employment. In 1896 he joined the Jail Department in the United Provinces and for several years past had been Superintendent of Benares Central Jail, but had been on furlough for the past two years. He served on the North West Frontier of India, in Waziristan, in 1894-95, and in Buner in 1897-9, gaining the medal and clasp for each campaign.

CAPTAIN ROBERT LONG GAMLEM, I.M.S., retired on temporary half pay from 24th November 1913. He was born on 2nd March 1881, educated at St. Thomas' Hospital and Cambridge, took the M.R.C.S. and L.R.C.P., London, in 1906, and the B.A., M.B., and B.C., at Cambridge in 1908 and entered the I.M.S. as Lieutenant on 1st August 1908 becoming Captain on 1st August 1911. He had been on sick leave since 10th February 1912. The Army List assigns him no war service.

LIEUTENANT VINCENT PHILIP NORMAN, I.M.S., retired on temporary half pay from 12th November 1913. He was born on 27th August 1882, educated at Durham University and London Hospital, took the L.M.S., of the Apothecaries Society in 1908, and entered the I.M.S. as Lieutenant on 30th July 1910. He had been on sick leave since 12th November 1911, so would seem to have put in less than a year's actual service in India. The Army List assigns him no war service.

In exercise of the power conferred by clause (2) of Regulation I of the Regulations for the nomination and election of Additional Members of the Legislative Council of the Governor of Fort William in Bengal the Governor is pleased to nominate Colonel George Francis Angelo Harris, C.S.I., M.D., I.M.S., to be a Member of the said Council.

Under the provisions of Article 260 of the Civil Service Regulations, privilege leave for three months is granted to Mr. H. E. Wells, M.B., C.M. (Edin.), Civil Surgeon PEGU, with effect from the date on which he may avail himself of it.

FIRST CLASS MILITARY ASSISTANT SURGEON G. W. Vincent is appointed to officiate as Civil Surgeon, PEGU, during the absence of Mr. Wells on privilege leave.

LIEUTENANT COLONEL C. DUER, I.M.S., has been granted by His Majesty's Secretary of State for India extraordinary leave without pay up to the 30th April 1914 in continuation of the leave previously granted.

CAPTAIN H. C. KATES, I.M.S., made over charge of Camp Bellpu to Lt. Col. A. W. T. Bust, I.M.S., on 6th November.

CAPTAIN F. G. STILES WEBB, I.M.S., joins the N.W. Frontier Province.

LIEUTENANT COLONEL G. MCILSMITH, I.M.S., is posted on return from furlough to Ludhiana vice Captain Laudie, I.M.S.

MAJOR E. L. PERRY, I.M.S., on return from leave, relieves Captain N. T. Wells, I.M.S., of the appointment of Deputy

Sanitary Commissioner, Punjab, and Captain Wells goes to Jullundur as Plague Medical Officer.

CAPTAIN C. A. GILL, I.M.S., is appointed, on return from long leave, Chief Malaria Officer, Punjab.

MAJOR J. G. SWAN, I.M.S., is appointed Civil Surgeon of Duthousie.

LIEUTENANT COLONEL W. MOSESWORTH, I.M.S., has got an extension of furlough up to 31st March 1914.

LIEUTENANT COLONEL R. H. ELLIOT, I.M.S., has got an extension of furlough up till 19th May 1914.

MAJOR W. G. RICHARDS, I.M.S., reported for duty at Madras on 1st November 1913.

MAJOR S. A. RUSSACK, I.M.S., is due out from 21 months furlough on 11th March.

CAPTAIN R. D. WILLCOCKS, I.M.S., is due out from 18 months' combined and study leave on 9th April.

CAPTAIN C. H. CROSS, I.M.S., was appointed probationary Chemical Examiner, Madras, with effect from 27th October.

CAPTAIN E. C. HODGSON, I.M.S., is the special malarial officer of Madras city.

The following notification by the Government of India, Department of Education (Sanitary), is republished —

"No 1800, dated the 26th November 1913

Major W. G. Liston, M.A., C.I.E., I.M.S., is elevated to his substantive appointment of Director of the Bombay Bacteriological Laboratory with retrospective effect, from the 1st April 1913. He is appointed to act as senior Member of the Plague Research Commission in addition to his own duties, with effect from that date and until further orders.

HIS EXCELLENCY THE GOVERNOR OF BOMBAY IN COUNCIL IS PLEASED TO MAKE THE FOLLOWING APPOINTMENTS —

Lieutenant Colonel W. E. Jennings, M.D., C.M. (Edin.), D.P.H. (Dub.), I.M.S., on return from Military duty to resume charge of his appointment as Health Officer of the Port of Bombay.

MAJOR J. L. MARJORIBANKS, M.D., D.P.H., I.M.S., on relief, to resume charge of his appointment as Deputy Sanitary Commissioner, Western Registration District.

LIEUTENANT COLONEL L. F. CHILDE, M.B. (Lon.), I.M.S., has been allowed by His Majesty's Secretary of State for India, an extension of furlough on medical certificate for three months.

CIVIL ASSISTANT SURGEON NISHI KRANTA DHAI, attached to the Sadar Dispensary, Moradabad, to hold civil medical charge of that district in addition to his own duties, as a temporary measure, vice Lieutenant Colonel J. G. Hulbert, I.M.S., granted leave.

CAPTAIN G. HOLROYD, I.M.S., whose services have been placed at the disposal of this Government by the Government of Bengal to officiate as superintendent, central prison, Bareilly, vice Captain J. F. Boyd, I.M.S.

CAPTAIN H. H. BROOME, I.M.S., assumed charge of his duties as Professor of Anatomy, Medical College, Lahore on the forenoon of the 17th October 1913, relieving Captain R. H. Bott, I.M.S., officiating Professor of Surgery, of the additional charge.

CAPTAIN R. H. BOTT, I.M.S., assumed charge of the office of Professor of Surgery, Medical College, Lahore, on the afternoon of the 9th October 1913, relieving Lieutenant Colonel E. V. Hugo, I.M.S., proceeded on leave.

LIEUTENANT COLONEL H. PILGRIM, F.R.C.S., I.M.S., has been granted an extension of service and retires on 10th May 1914.

The following changes are sanctioned among Agency Surgeons under the Foreign Department —

Consequent on the creation of an appointment of Consular Surgeon, Mohammerah, and with effect from the 13th July 1913 Major N. E. H. Scott, Indian Medical Service, to be confirmed as an Agency Surgeon of the 2nd Class.

Consequent on the creation of an appointment of Civil Surgeon, Sibi, and with effect from the 26th September 1913 —

Captain G D Franklin, Indian Medical Service, to be confirmed as an Agency Surgeon of the 2nd Class

IN exercise of the power conferred by section 10 of the Indian Councils Act, 1861 (21 & 25 Vict., c. 67), as modified by the Indian Council Act, 1909 (9 Edw. 7, c. 4), and in pursuance of the provisions of Regulation XI (2) of the Regulations for the nomination and election of Additional Members of the Legislative Council of the Governor General of India, published under Notification No. 61, dated the 14th November 1912, the Governor General is pleased to nominate Surgeon General Sir Charles Pardee Lukis, KCSI, I M S, being an official, to be an Additional Member of the said Council, vice Surgeon General A M Crofts, resigned

CAPTAIN R B Lloyd, M B, I M S, is appointed to officiate as Chemical Examiner, Bengal, and Professor of Chemistry in the Medical College, Calcutta, with effect from the 21st November 1913

MAJOR EDWARD SURMAN PECK, M B, I M S, Bengal, has been permitted by the Most Hon'ble the Secretary of State for India to retire from the service, subject to His Majesty's approval, with effect from the 6th December 1913

Major Peck entered the service on 29th January 1894, and was consequently near his promotion to be Lt Colonel. He has been out of India on medical certificate since 19th June 1912

CAPTAIN R H LEE, M B, I M S, Civil Surgeon, Midnapur, has taken the D P H of Trinity College, Dublin

ON return from furlough, Capt A Barnardo, I M S, is posted as Civil Surgeon to Comilla

ON being relieved of his officiating appointment as Professor of Materia Medica, Medical College, Calcutta, and second physician to the College Hospital, Major E E Waters, I M S, Civil Surgeon, is allowed privilege leave for twenty six days, under Article 260 of the Civil Service Regulations, with effect from the 15th December 1913, or any subsequent date on which he may avail himself of it

Early in January Major Writers rejoined as Civil Surgeon of Howrah, vice Lieutenant Colonel H H Nott, gone on furlough

CAPTAIN F R COPPINGER, I M S, and Major A F W King, I M S, respectively, delivered over and received charge of the Aden Special Prison, on the 10th November 1913, before office hours

CAPTAIN W A MEARN, I M S, and Captain D C V Fitzgerald, I M S, respectively, delivered over and received charge of the Hyderabad Central Prison, on the 23rd November 1913, after office hours

MAJOR G MCPHERSON, M B, C M, I M S, is granted privilege leave of absence for two months and twenty seven days with effect from the 14th December 1913 or the subsequent date of relief

HIS Excellency the Governor in Council is pleased to appoint Major R M Carter, FRCGS, LRCP (London), DTM (Liverpool), I M S, to act as Presidency Surgeon, Second District, and in Medical charge of the Common Prison, the House of Correction and the Byculla schools, in addition to his own duties, during the absence on leave of Major G McPherson, M B, C M, I M S, or pending further orders

WITH effect from the 24th October 1913, Major J E Clements, I M S, officiating Superintendent Central Prisons is confirmed in that appointment, vice Lieutenant Colonel W H Gray, I M S, retired

The services of Lieutenant Colonel E Jennings, I M S, Superintendent, Central Prison, on return from leave, are replaced at the disposal of the Government of India, Home Department

DILAN JAI CHAND, D T V, LRCP, etc., is appointed temporarily as additional Deputy Sanitary Commissioner, Punjab, with effect from the forenoon of the 16th October 1913

IN exercise of the power conferred by section 85 of the Indian Lunacy Act, 1912 (IV of 1912), the Governor General in Council is pleased to direct that Magistrates or Courts

exercising jurisdiction in the Province of Bihar and Orissa may send European Lunatics to the Bhawanipore Lunatic Asylum in the presidency of Fort William in Bengal

THE undermentioned officers have been permitted by the Most Hon'ble the Secretary of State for India to retire from the service, subject to His Majesty's approval, with effect from the dates specified —

Lieutenant Colonel George Henry Baker, M B, —24th December 1913

Lieutenant Colonel William Henry Gray, M R, —24th October 1913

WITH reference to the Notifications quoted in the margin,

Army Department Notification No. 282, dated the 7th April 1911

Army Department Notification No. 822, dated the 29th September 1911

to 28th December 1911

the promotion to the present rank of Major William Gavin Hamilton, published in Army

Department Notification No. 655, dated the 5th July 1912, is ante

dated from the 28th June 1912

THE following promotion is made, subject to His Majesty's approval —

Lieutenant to be Captain, I M S

Walter Oliphant Walker, M B, —22nd October 1913

THE services of Major A C MacGillchrist, I M S, Civil Surgeon, Rajshahi, are placed temporarily at the disposal of the Director General, Indian Medical Service with effect from the 30th October 1913, or any subsequent date on which he may be relieved of his duties

THE Department of Education, notifications Nos 1663 and 1769 Sanitary, dated the 22nd October 1913 and 19th November 1913, are hereby cancelled

LIEUTENANT COLONEL R C MACWATT, Indian Medical Service (Bengal), an Agency Surgeon of the 2nd class, on being relieved of the duties of Officiating Agency Surgeon of the 1st class, and Civil Surgeon, Ajmer, and Chief Medical Officer in Rajputana States, is posted as Agency Surgeon Eastern Rajputana States, with effect from the 7th November 1913

MAJOR S HUNT, I M S, an Agency Surgeon of the 2nd class, is granted privilege leave for one month, with effect from the 26th November 1913

THE undermentioned departmental commissioned officers, with honorary rank, are permitted to retire from the service, subject to His Majesty's approval, with effect from the dates specified —

Senior Assistant Surgeon and Honorary Captain John Goldsmith, —8th November 1913

Senior Assistant Surgeon and Honorary Captain Donald Smith Ollendorf, —22nd November 1913

Senior Assistant Surgeon and Honorary Captain Arthur David Cotton, —8th December 1913

CAPTAIN, K K MUKERJI, I M S, is appointed to act as Deputy Sanitary Commissioner, Buidwan Circle, Bengal

DR N P DUTTA, M D, is posted to Guigaon as Civil Surgeon

LIEUTENANT COLONEL A W T BUIST, I M S, is posted to Campbellpur on return from leave

LIEUTENANT COLONEL G F W EWENS, I M S, on return from leave, resumed charge of the Punjab Asylum at Lahore

DR E H HANKIN, Chemical Examiner, Government Analyst and Bacteriologist for the United Provinces and the Central Provinces, on completion of his deputation at Calcutta, was granted privilege leave, combined with furlough, for a total period of eleven months and fourteen days, with effect from the 20th November 1913

CAPTAIN L COOK, I M S, was posted to Sambulpur as Civil Surgeon, with effect from 5th December 1913

HIS EXCELLENCY the Governor of Bombay in Council is pleased to make the following appointments —

Captain J Smalley, M B, I M S, on relief, to act as Assistant to the Civil Surgeon, Poona, with attached duties, vice Captain A F Hamilton, M B (Lond.), FRCGS, I M S, proceeding on leave

Captain B B Paymaster, I M S, on return from leave, to do duty as Civil Surgeon, Kaiwar

MAJOR W D RITCHIE, I M S, made over charge of the Tezpur Jail to Lieutenant Colonel E C MacLeod, I M S, on the afternoon of the 18th November 1913.

CAPTAIN W F BRAYNE, I M S, held charge of the current duties of Port Health Officer, Rangoon, in addition to his own duties as officiating Deputy Sanitary Commissioner, Burma, from the forenoon of the 13th to the forenoon of the 19th November 1913.

UNDER the provisions of Article 260 of the Civil Service Regulations, privilege leave for three months is granted to Senior Military Assistant Surgeon and Honorary Captain T W Minty, Civil Surgeon, Pyapon, with effect from the date on which he may avail himself of it.

LIEUTENANT COLONEL J PENNY, I M S, has been granted by His Majesty's Secretary of State for India an extension of leave on medical certificate for four months.

He was permitted to study for three months during the leave granted to him in this department Notification No 126, dated the 17th April 1914.

CONSEQUENT on the appointment of two additional I M S officers at the King George's Medical College at Lucknow —

(i) Civil Assistant Surgeon Rai Bihari Lal Pande Bahadur, officiating Civil Surgeon, Azamgarh, to be confirmed in that appointment from the 1st September 1913.

(ii) Civil Assistant Surgeon Rai Qanauji Lal Bahadur, lecturer, Aga Medical School, to be Civil Surgeon from the 1st October 1913 and to be posted to Jalun.

MILITARY ASSISTANT SURGEON P B MILLS, I S M D, officiating Civil Surgeon, from Jalun to Mainpuri.

LIEUTENANT COLONEL C H JAMES, C I D, F R C S, I M S, Civil Surgeon, Simla (West), is granted privilege leave for one month, with effect from the 26th November 1913.

WITH effect from the 17th June 1913, Major H W Illius, I M S, officiating Civil Surgeon, 2nd class, to be substantive *pro tempore* in that appointment, vice Lieutenant Colonel H B Melville, I M S.

CAPTAIN T C LUCAS, R A M C, Surgeon to His Excellency the Governor, is granted combined leave from the 4th January to the 9th May 1914, with such privilege leave as may be due to him on the date of departure.

CAPTAIN H H G KNAAPP, M D, I M S, Superintendent of Jail, is permitted to return to duty before the expiry of his leave, and is posted to the charge of the Rangoon Central Jail in place of Major A G Saigent, I M S, who is holding temporary charge of the Jail.

CAPTAIN A T PRIDHAM, M B, I M S, Superintendent of Jail, *sub pro tem*, on return from leave, is posted to the charge of the Mandalay Central Jail in place of Captain P K Tarapore, I M S, transferred.

CAPTAIN P K TARAPORE, I M S, Superintendent of Jail, *sub pro tem*, on relief by Captain A T Pridham, M B, I M S, is posted to the charge of the Insein Central Jail in place of Captain C H Fielding, M B, I M S, transferred.

MAJOR M MACKELVIE, I M S, is, on return from leave, appointed to act as a Civil Surgeon of the second class and is posted to Rajshahi, with effect from the forenoon of the 24th November 1913.

BABU BARADA KANTA ROY, Civil Assistant Surgeon, made over charge of the Chittagong Jail to Military Assistant Surgeon H G C Mills on the afternoon of the 8th December 1913.

LIEUTENANT COLONEL A H NOTT, I M S, Civil Surgeon, Howrah, is allowed privilege leave combined with furlough for two years, *viz*, privilege leave for two months and thirteen days under Article 260 of the Civil Service Regulations, and furlough for the remaining period under Article 308 (b) of the Regulations, with effect from the 9th January 1914, or any subsequent date on which he may be relieved of his duties.

CAPTAIN G E MALCOLMSON, who retired from the Service on 2nd September last, has been appointed Professor of Physiology in the University of Hong Kong.

CAPTAIN N M WILSON, I M S, is posted as Plague Medical Officer, Gidaspur, and Captain A R Laudie, I M S, has gone to D G Khanas Civil Surgeon.

THE Viceroy and Governor General has been pleased to make the following appointment on His Excellency's Personal Staff —

To be Honorary Surgeon

Brevet Colonel H F Cleveland, I M S, vice Colonel C F Willis, C B, M D, I M S, retired. Dated the 1st October 1913.

THE services of Major J E Clements, I M S, are placed permanently at the disposal of the Government of the United Provinces, with effect from the 24th October 1913, for employment in the Jail Department.

LIEUTENANT FRAMROZE JAMSETJEE KOLAPOREWALLA, I M S, has been permitted to adopt the name Framroz Jamsetjee Kolapore.

LIEUTENANT COLONEL J M CRAWFORD, I M S, Civil Surgeon, on return from leave, is posted to Benares, and Major R F Baud, I M S, Civil Surgeon, is transferred from Benares to Gonda.

Notice.

SCIENTIFIC Articles and Notes of interest to the Profession in India are solicited. Contributors of Original Articles will receive 25 Reprints gratis, if requested.

Communications on Editorial Matters, Articles, Letters and Books for Review should be addressed to THE EDITOR, *The Indian Medical Gazette*, c/o Messrs Thacker, Spink & Co, Calcutta.

Communications for the Publishers relating to Subscriptions, Advertisements and Reprints should be addressed to THE PUBLISHERS, Messrs Thacker, Spink & Co, Calcutta.

Annual Subscriptions to "The Indian Medical Gazette," Rs 12, including postage, in India Rs 14, including postage, abroad.

BOOKS, REPORTS, &c, RECEIVED —

- D Turner's Radium, 2nd Ed Price, 5s Baillière, Tindall & Cox
- W E Wynter's Minor Medicine, 2nd Ed Butterworth & Co (India), Calcutta
- Dercum's Manual of Mental Disease Price, 13s W B Saunders & Co
- Dorland's Illustrated Medical Dictionary, 7th Ed Price, 19s W B Saunders & Co
- Dorland's Pocket Medical Dictionary, 5s W B Saunders & Co
- J B Murphy's Surgical Clinics Vol 2 Plate 5 W B Saunders & Co
- Punjab Sanitary Conference Proceedings
- Livingstone & Co's Catechism Series, Bacteriology, Plates 1 and 2
- Livingstone & Co's Catechism Series, Medicine, Plate 1
- Webster's Diagnostic Methods (3rd Ed) H Kimpton
- Fles and Diseases, Cambridge P Health Series, 10s 6d
- Wanklyn, Administrative Contest of Small-pox (Longmans, Green & Co)
- Henson's Malaria H Kimpton Price, 10s 6d
- McCaw's Diseases of Children Baillière Tindall & Cox Price, 10s 6d
- Iugano Modern Problems in Psychiatry (Camb Univ Press), 7s 6d
- Morison's Disorders of the Heart Baillière Tindall & Cox Price, 7s 6d
- Colonel Hohir's Hygiene for India (new Ed) Higginbotham & Co, Madras
- F R C S Ed Papers Livingstone & Co, Edinburgh
- Dental Examn Papers Livingstone & Co, Edinburgh
- The Purpose of Education, Lane Fox Pitt, Camb Univ Press
- De Garmo's Mechanical Treatment of Hernia, Lippincott Co Sold by Butterworth & Co, Hastings Street, Calcutta
- Bernheim's Surgery of Vascular System, Lippincott & Co Sold by Butterworth & Co, Hastings Street, Calcutta
- Whitman & Muller's Sero-diagnostic Methods, Lippincott & Co Sold by Butterworth & Co, Hastings Street, Calcutta
- Nicholson's Blood Pressure, Lippincott & Co Sold by Butterworth & Co, Hastings Street, Calcutta
- Daniel's Tropical Medicine, Plate 1 2nd Ed Butterworth & Co, 10s Sold by Butterworth & Co, Hastings Street, Calcutta
- Cattell's New Medical Dictionary, Lippincott & Co Sold by Butterworth & Co, Hastings Street, Calcutta
- International Clinics, 23rd Series Vols I, II and III Lippincott & Co Sold by Butterworth & Co, Hastings Street, Calcutta

LETTERS, COMMUNICATIONS, &c, RECEIVED FROM.—

- Major J W Rait, I M S, London, Lt Col D G Crawford, I M S (ret'd), London, Lieut Bonnar, I S M D Lt Col Vost, I M S, Lt Col E A R Newman, I M S, Alipur, Major Chitalc, I M S Damoh, Dr Boersma, Jala, Col P Hohir I M S, Poona Dr Chatterjee, Calcutta, Major R L Lloyd I M S, Calcutta, Capt Gray I M S Madras, Col Manifold, I M S, Lucknow, Col Dennys, I M S, Nagpur Lt Col Donovan, I M S, Madras, Major Sutherland, I M S, Lahore and Lt Col Jennings, I M S, Bombay

Original Articles.

THE EMETINE AND OTHER TREATMENT OF AMOEBOIC DYSENTERY AND HEPATITIS INCLUDING LIVER ABSCESS.*

BY LEONARD ROGERS, M.D., F.R.C.P., B.S.B.Sc., F.R.C.S.,
I.M.S.

In opening our discussion of this subject I need say very little on the value of hypodermic injections of emetine hydrochloride introduced by me last year, as the rapid specific curative action of this treatment has been generally recognized in all parts of the world where amoebic cases are met with, and it is not too much to say that one of the most distressing and intractable diseases of tropical and sub-tropical climates has been conquered.

The relative value of Emetine and Cephaeline Hydrochloride—During the past year I have been making experimental and clinical observations to determine the relative values of emetine and cephaeline hydrochloride to determine if the total alkaloids of ipecacuanha would be equally efficient and cheaper than the pure emetine salt and I will first briefly summarize the results.

within a few hours. Moreover, when the amoebæ cease moving in the presence of the alkaloid, if it is not of sufficient strength to cause changes in the structure of the organisms visible under the microscope, it is impossible to say if the organism has been killed, or has entered a quiescent stage perhaps preparatory to becoming encysted.

Experiments with water paramecia—I therefore tried the effects of the alkaloids on the common water paramecia, and found that high dilutions of the salts of both emetine and cephaeline caused these organisms to rapidly lose their motility while many of them presented clear round spaces which soon became large bladder-like protrusions. When the solutions were added to water containing large number of the paramecia, they rapidly lost their movement and fell to the bottom of the tubes, and this change corresponded with the microscopical ones just mentioned and could be easily followed with a hand lens. By this simple test I was able to work out accurately the toxicity of emetine and cephaeline hydrochlorides and also mixtures of the two as obtained from powdered ipecacuanha root, against paramecia and the results are shown in Table I.

I am aware that it has been shown by the Philippine workers that emetine hydrochloride

TABLE I.—EXPERIMENT ON THE ACTION OF THE ALKALOIDS OF IPECACUANHA ON WATER PARAMECIA.

Dilutions

Alkaloid	1—10,000	1—100,000	1—200,000	1—500,000	1—1,000,000	1—2,000,000
Emetine	Killed in 1 minute	25 minutes	1 hour	3 hours	20 hours	
Hydrochloride "	Alive after			1½ hours	3 hours	24 hours
Cephaeline	Killed in 3 minutes	45 minutes	20 hours			
Hydrochloride	Alive after	30 minutes	3 hours	20 hours		
Amoebetine	Killed in 3 minutes	35 minutes	1 hour	20 hours		
(Allen & Hanbury)	Alive after	17 minutes	28 minutes	1½ hours	20 hours	
Mixed alkaloids	Killed in 3 minutes	57 minutes	1 hour	20 hours	20 hours	
(B.W. & Co.)	Alive after	30 minutes		1 hour	20 hours	
Mixed alkaloids	Killed in 7 minutes	1 hour		20 hours	20 hours	
P.D. & Co	Alive after	30 minutes		1 hour		

TABLE II.—TOXICITY OF EMETINE HYDROCHLORIDE IN ANIMALS.

Animal	Equivalent Dose for a 70 Kilo man	Method of Administration	Result
Guinea pig	5 grains per 70 kilo	Hypodermically	No symptoms
Do	10	Do	Do
Rabbit	5	Do	Do
Do.	5	Do	Do
Do.	10	Do	Do
Do.	15	Do	Do
Do.	4	Do	Died in 10–18 hours
Monkey	5	Do	Died in one minute with convulsions
Do	10	Hypodermically	No symptoms
Do	15	Do	Do

obtained. In the first place, I found that the cephaeline salt had a less energetic action of pathogenic amoebæ in flesh dysenteric stools than the emetine salt had. It is, however, difficult to obtain accurate comparisons of the lethal action of the two alkaloids in this way, because dysenteric amoebæ cannot be cultivated and they tend to die out in dysenteric stools.

is not effective against the *balantidium coli*, so that it does not necessarily follow that the action of these alkaloids on paramecia is exactly parallel with that on the amoeba dysenterica, yet the fact that I have found them to be in close agreement in their actions on these two forms of protozoa is suggestive of such a relationship and makes the results of my experiments worthy of record.

The data given in Table I show that emetine hydrochloride was the most active preparation, as

* Read at Medical Section of Asiatic Society of Bengal

it killed the *paramecia* in a dilution of 1 in 500,000 within three hours and up to 1 in 1,000,000 within 20 hours. On the other hand cephæline hydrochloride in a dilution of 1 in 200,000 failed to kill in three hours, while 1 in 500,000 did not kill in 20 hours. Three samples of mixed ipecacuanha alkaloids containing both emetine and cephæline hydrochlorides in varying proportions, together with a very small quantity of psychotrine in at least one of them all killed the *paramecia* in dilutions of 1 in 200,000 within one hour and up to 1 in 500,000 in 20 hours, being thus intermediate in strength between the two principal alkaloids, as might have been expected.

Clinical Tests—I have also treated a number of cases of amœbic dysentery, in whose stools pathogenic amœbae were found microscopically, with either cephæline or mixed ipecacuanha alkaloids in the form of soluble hydrochlorides. In all the cases the salts were given hypodermically and the results carefully recorded. It is unnecessary to go into details of these cases, and it will suffice to state that although both pure cephæline hydrochloride and mixtures of this with emetine hydrochloride both gave results far superior to the old oral administration of ipecacuanha powder, yet the results, as judged by the rapidity of improvement in the number and character of the stools and the disappearance of the amœbae from them, were distinctly inferior to those obtained by the use of an equal quantity of pure emetine hydrochloride. Moreover, the pure cephæline was inferior to the mixtures of the two alkaloids.

We may therefore conclude that the pure emetine hydrochloride is the best alkaloid in amœbic disease, and that any slight gain due to possible lower price of the mixed ipecacuanha alkaloids is counterbalanced in the lesser efficacy of such preparations.

Toxicity and Dosage of Emetine Hydrochloride—Although the one-half to one grain doses of emetine hydrochloride, equivalent to 45 to 90 grains of ipecacuanha, are as a rule quite effective in amœbic disease, still a case has been reported by Allan in the United States in which it was not until a four-grain dose was given that a rapid cure resulted. It would be interesting to know the body weight of that patient I have, therefore, tested the toxic effect of emetine hydrochloride both subcutaneously and intravenously in certain animals, with the results shown in Table II.

As the lethal dose was very much the same for both rabbits and monkeys, it is probable that the results obtained will apply fairly accurately to man. As the equivalent of ten grains for a man of the weight of 70 kilos was harmless, while it took an equivalent of 15 grains to produce a fatal result there would appear to be ample

margin of safety. On the other hand, it is worthy of note that rabbits may be killed by the rapid injection intravenously of an equivalent of 5 grains in a man, so that when given in this manner the dose should not exceed two grains and be well diluted and injected slowly as I advised in introducing this method of administration in very urgent cases. Cases requiring intravenous injections of the salt are however, rare and I have not seen the slightest harm in their use with the precautions mentioned. In ordinary cases I now nearly always give one grain doses once daily, or in bad cases two or three times in the first day or two. It is remarkable how little nausea or depression follows such a dose, and I have repeatedly injected one grain in my consulting room in chronic amœbic infections and allowed the patient to go about his work.

In cases of severe amœbic dysentery complicated by advanced pregnancy, I prefer to give half-grain doses twice a day at first, and if no nausea results one-grain doses once a day can be gone on with. In an Indian patient seen in consultation, who had suffered from amœbic dysentery throughout her six months of pregnancy, the dysentery was cured within four days although previous treatment by various systems had been useless.

In patients who decline injections of the alkaloid, the keratin coated pill of emetin hydrochloride, which were made at my suggestion by Burroughs Wellcome & Co., are often more effective and less distressing than powdered ipecacuanha, although nausea and vomiting is not altogether eliminated by this mode of administration. If nausea follows hypodermic injections it can be prevented by the patient lying still without food or water for two or three hours before and after the injection. After a number of hypodermic injections of emetin the drug can sometimes be taken by the mouth without nausea or sickness.

Amœbic Diarrhoea and Latent Amœbic Infection of the Bowel—Increasing experience reveals the frequency with which amœbic bowel disease is overlooked until hepatitis or other serious complications have arisen. In these cases the lesions are commonly limited to the caecum and ascending colon, and true dysenteric symptoms are completely absent. Irregularly recurring diarrhoea should always give rise to a suspicion of amœbic disease in countries where it commonly occurs, and lead to an examination of the stools for amœba. Another clinical sign of great value is slight tenderness, and occasionally thickening, in the right iliac fossa, sometimes mistaken for appendicitis. I recently found this in a patient sent to consult me for "indigestion". As he had had slight dysenteric symptoms some months before, I gave some sodium sulphate, and on examining the resulting loose stools found pathogenic

amebae and treated him accordingly. In another patient in whom cancer of the cæcum was suspected the thickening and tenderness cleared up almost completely under emetine hydrochloride, and he was well over a year later. Such cases as these are by no means rare and we should always be on the watch for them, as nothing is more satisfactory than their treatment once their true nature is recognised, although they may have been a source of chronic ill-health for long periods before their recognition.

Amebic Hepatitis.—The great success of the ipecacuanha treatment of amebic hepatitis since it was reintroduced by me, and placed on a scientific basis by the discovery of its invariable close dependence on previous amebic disease of the bowel and the diagnostic value of the peculiar type of leucocytosis occurring in the more chronic and obscure cases is well-known, and naturally led me to substitute hypodermic injections of emetine salts for oral administration of the powdered root, with very favourable results as already reported. The following are the points I would lay stress on in regard to this class of cases.—Firstly, that the drug should be persisted with for longer periods in amebic hepatitis than is usually necessary in amebic dysentery, the treatment being kept up with gradually increasing intervals between the doses for two or three weeks. Secondly repeated leucocyte counts are necessary and if they show steadily decreasing numbers the emetine should be continued until no excess of white corpuscles remains. If, on the other hand, the leucocytosis persists in spite of prolonged emetine treatment, it is exceedingly probable that suppuration has already taken place, and the pus should be removed as far as possible by aspiration, and if it is free from bacteria the injections of emetine hydrochloride continued until the pus ceases to collect again.

The insidious cases of amebic hepatitis with prolonged fevers, but often without any actual tenderness of the liver, should always be carefully borne in mind, and the confirmatory leucocytosis with comparatively low proportion of polynucleated sought for. It is just these cases which still sometimes drift on into liver abscess before the condition is detected. With the advent of the emetine treatment the truth is more evident than ever of the statement I made regarding amebic liver abscess some years ago, namely, that "it is now not too much to say that this dreadful disease is entirely preventable, in the vast majority of cases, in those who come under skilled treatment in the early stages of acute amebic hepatitis, and the formation of a tropical liver abscess should soon become a very rare occurrence which ought to cause serious questionings in the mind of the medical man in whose hands it has been allowed to develop."

How near this prophecy has already come to fulfilment will be apparent from the following figures of the yearly number of cases of liver abscess in the Calcutta General Hospital and in the British Army in India during the last few years—

GENERAL HOSPITAL, CALCUTTA			BRITISH ARMY IN INDIA		
YEAR	CASES	DIED	TOTAL ADMISSIONS	CASES	DEATHS
1901	12	5	2,506	Average—	
1902	9	6	2,977	157 ½	92 5
1903	6	2	3,040	189 1/3	—
1904	12	4	2,925	184	96
1905	9	7	3,076	152	83
1906	21	6	3,197	183	107

Paper on ipecacuanha as preventative of amebic liver abscess published 1907—

1907	5	3	3,264	165	70
1908	7	1	3,249	115	55
1909	5	2	3,081	100	34
1910	7	2	3,242	75	35
1911	8	3	3,190	71	33
1912	5	3	3,368		
1901-6	69 (2 34% of admsns)	3 (1 02% of admsns)			
1907-12	35 (9 08% of admsns)	11 (0 32% of admsns)			
	Reduction 59 1% of admissions and	68 6% of deaths			

THE ROLE OF EMETINE HYDROCHLORIDE IN THE TREATMENT OF AMEBIC LIVER ABSCESS

It is unnecessary for me to add materially to what I recorded last year on this subject, especially as several important papers on the treatment of liver abscess will be read by surgeons with great experience of the subject, so it will be better for me to reserve my remarks for the discussion on these papers. Thanks to the kindness of Major's Coppering and Rait and Dr K K Chatteji, Surgeon of the Campbell Hospital, I have had an opportunity of watching a number of cases of liver abscess treated by my method of aspiration and injection both into the abscess cavity at the time of operation, and afterwards subcutaneously, of emetine hydrochloride. The results of most of these cases will be dealt with by Dr Chatteji in his paper, and I need only say that I think the method is an improvement even on my former plan of aspiration and injection of quinine hydrochloride into the cavity, together with oral administration of ipecacuanha, good as were the results of the latter as compared with the open operation, with almost inevitable contamination of the cavities with cocci and bacteria from the air, and prolonged and exhausting suppuration. I am inclined to think that it may ultimately prove unnecessary to inject emetine hydrochloride into the abscess cavity as well as subcutaneously, especially in view of the remarkable case of Mallamah, in which a large liver abscess the patient declined to have opened completely disappeared under persistent emetine treatment. There are doubtless a few cases, including the small superficial epigastric left lobe abscess which may still have

to be opened and drained, but fortunately the mortality of these by the open operation is much less than that of the larger and more deeply seated abscesses of the right lobe. These points must be left to experienced surgeons to determine. It is, however, not too much to say that at the present time the advisability of not opening the majority of these amoebic abscesses which are sterile as regards bacteria, and due solely to the dysenteric amoebæ, which we now know can be killed by hypodermic injections of emetine hydrochloride, is becoming increasingly recognised all over the world.

A SERIES OF 101 CASES OF ABSCESS OF THE LIVER *

BY E. OWEN THURSTON, F.R.C.S.,
MAJOR, I.M.S.

THIS series of cases is considered to be worth publishing for several reasons, they are, firstly, sufficiently numerous to enable conclusions to be drawn from them with a moderate degree of accuracy, they cover the practice of an individual surgeon for some thirteen years and must, therefore, be necessarily egotistical and have also been performed in several districts which will give to a certain extent the comparative incidence of the disease in various places, and lastly and by no means the least important factor is that this paper is the result of my personal notes made at the time of operation and kept by me, and although in some of the cases the information is not quite so full as may be desired, yet it is accurate certainly as regards treatment and results, less so as regards the history given by the patients. As far as my experience goes, the information obtained by going over the ordinary old hospital notes is practically of no value.

The table requires, I think, little or no explanation. In the earlier cases when it was the practice to open and drain the abscess I usually used to resect a rib whenever necessary, that is when the abscess was not anterior, this is covered by the word incision to avoid unnecessary verbiage, as the resection of a rib has practically no influence upon the result of the operation. In cases which left hospital before complete cure they are either classed as cured? or died?, this is of course inaccurate, but in doubtful cases I have erred towards the latter diagnosis. I have not added a column for anaesthesia as my notes are incomplete on this point, but a fairly large proportion of the more recent cases were aspirated under local cocaine or eucaine anaesthesia and in cases which were primarily operated on under chloroform respirations were often performed

under local anaesthesia. In large abscesses with a patient in bad condition the administration of a general anaesthetic is best avoided. The conclusions drawn from the cases follow the table. An additional case is added at the end as it was doubtful whether it was liver or spleen, most probably the latter. Under the heading medicinal treatment *ml*—no ipecacuanha or emetine though symptoms were treated. In the calculations that follow, case No. 88 is omitted as it was one of septic pyphlebitis though secondary to dysentery, of the bacillary type.

Taking the columns in order out of 100 cases of the amoebic type, we have 97 males and 3 females which corresponds with Leonard Roger's figures.

Age noted in 98 cases, gives an average of 34.5 years. As Indians are usually inaccurate as regards their age this can only be considered approximate.

As regards age in relation to mortality out of 64 cured by all methods of treatment, and 34 deaths, the average age was the same in each i.e., 34.5 years.

Caste shows—Hindus 85, Mohamedans 10, European and Anglo-Indians 6, this is practically in accordance with other's experience.

Duration of symptoms before operation—Out of 61 cases cured the average duration works out at 57.3 days and of 32 deaths at 50.6. I do not think that any very definite conclusion can be drawn from this, except that the disease before being definitely recognised is of long duration. The element of inaccuracy above referred to applies and patients may have very likely included a previous attack of malaria with their history of the liver disease. The shortest period given was 8 days and the longest 8 months, one was a case discharging through the lung, another not.

Regarding dysentery—Out of 79 cases in which this point is referred to in my notes, 44 gave a positive and 35 a negative history.

As regards alcohol—in 75 cases the history was positive in 42, negative in 33 showing that this is an important element, most of the patients being Indians who do not as a rule indulge in this intoxicant.

The column "where operated," e.g., district, shows that this disease is very much more common in Lower Bengal than in Behar, 85 cases came under treatment in the former province as compared with 15 in the latter. I may add that my length of service in Civil employ is practically the same in both the areas referred to.

The presence of amoebæ or the reverse is of no particular value and might well have been omitted, in some cases where the pus showed organisms of suppurations the specimen had often been sent some days after operation.

The site of operation column's result may be most clearly expressed in tabular form, it refers to all methods of operation. Epigastrium is by no means to be considered to refer to left lobe abscesses alone

Site.	No	C	D	Percentage—Cures, Deaths.
Epigastrium	56	37	19	Cures 66% Deaths 34%
Below ribs laterally	4	3	1	Cures 75% Deaths 25%
Ribs laterally	40	27	13	Cures 67% Deaths 32.5%
TOTAL	100	67%	33%	

The mortality is distinctly lower than that usually given in the books which refer to a larger number of cases, but is in no way the result of any selection of cases

The results obtained from the above series of cases do little more than agree with the conclusions of other observers, the remaining columns enter into more debatable ground

Method of operation — It is scarcely worth while going into an exhaustive analysis of the earlier cases which were treated by incision and drainage, as this method to all intents and purposes is obsolete except under unusual conditions (I propose to refer to some exceptional cases later) The results of medicinal treatment have been worked out in all the cases treated by whatever method of operation they are considered to be worthy of interest

	C	D	Percentage Cured	Percentage Died
Cases without medi cal treatment internally				
30	18	12	60%	40%
Cases treated with Ipecacuanha	25	10	71.4	28.6
Cases treated with Emetine	24	8	75%	25%

It is to be admitted that the number is too small to admit of any definite conclusions as there is such a thing as a run of luck as regards cases.

Of the 35 cases treated with Ipecacuanha, 21 were only aspirated of these 17 were cured, four died 5 cases were treated by aspiration followed by drainage, of these 3 were cured and 2 died 9 cases were treated by drainage alone, among them 5 were cured and 4 died The results are therefore largely in favour of aspiration alone

Of the 32 cases treated with emetine, 27 were subjected to aspiration alone, of these 20 recovered and 7 died, 2 cases were dealt with by aspiration followed by drainage, 1 was cured, the other died Cases treated by drainage alone were 3 of these all recovered, these were all abnormal cases, i.e., case No 67 was of doubtful diagnosis, it was explored, abscess cleaned with gauze and sutured No 75 resembled a case of appendicular abscess, and No 99 a perinephritic abscess and was treated similarly to No 67

Adding together these two series of cases, we get for aspiration alone a total of 48 cases, of which 37 were cured and 11 died i.e. a percentage mortality of 23 per cent

For aspiration plus drainage 7 cases with a mortality of 3, i.e. 43 per cent Of 12 cases treated by drainage alone 4 died, a mortality of 33 per cent, a verdict very much in favour of aspiration alone

The next point to be considered is the number of aspirations required.

There were 26 cases which were only aspirated once, of these, 18 were cured and 8 died, quinine solution was injected into the abscess cavity in 6 cases, of these, 5 were cured and 1 died In 2 cases aspiration was followed by incision and drainage The amount of pus varied from 3ozs or less to 78½ ozs The average quantity of pus in the cases that recovered (taking only those in which the amount was noted) was 26ozs, in those that died 21ozs

Sixteen cases were aspirated twice; of these, 12 recovered and 4 died, 2 cases were later drained Quinine solution was used in 5 cases, 3 were cured, 2 died The total amount of pus varied from 5 ozs to 99 ozs, the average amount being, where known, cured 40 ozs., died 10 ozs Drainage cases were of necessity excluded

Ten cases were aspirated three times with 8 recoveries and 2 deaths, in one case drainage followed Quinine solution was used on three occasions with no deaths. The total amount of pus varied from 9½ ozs to 182 ozs, the average amount in cures being 63ozs, in deaths 62 ozs.

One patient was aspirated four times and was later drained and cured, the pus removed by aspiration amounted to 27 ozs.

One case had to submit to aspiration 7 times and another 8 times, in the former the pus varied from 15ozs to 92½ozs (the largest quantity I have removed at a single aspiration), the total being 343ozs Result—death. The latter's pus varied from 12-40ozs, total 211ozs, and was finally cured, though he had a narrow escape from opium poisoning due to an overdose, he was habituated to the drug.

The question now arises as to the value of the injection of quinine solution into the abscess cavity. To be statistical once more 14 cases were treated by this method, of these 11 were cured and 3 died, or a percentage of 78 57% and 21 42% respectively. Cases without quinine numbered 33 with 25 cures and 8 deaths a relative percentage of 75 7% and 24 3%.

There is thus very little in favour of the injection of quinine solution on the face of these figures, always taking into account that the number is small. My personal impression is that cases treated with quinine were more likely to require a second aspiration. My present practice is to inject a grain of emetine hypodermically immediately after the aspiration. At this time there is presumably a flow of serum etc towards the abscess cavity owing to the loss of pressure produced by the removal of the pus and the emetine is more likely to attack the young and active amœbæ in the advancing wall of the abscess which are a more important factor than those on the inner side.

This view receives support from the fact that one had often to scrape the wall of an abscess cavity vigorously before securing tissue in which amœbæ were found. The same argument also I think applies to the injection of emetine directly into the abscess cavity.

There is one important point on which elucidation is required i.e. the amount of emetine necessary. In my cases the amount varied up to 20 grs. (I will not vouch for the absolute accuracy of these figures, but as they were compiled by skilled observers I think they may be accepted), this amount, i.e. 20 grs. is certainly too much, but what should be an average dose? In this connection I would wish to draw attention to case No. 82, this man had 13 grs. of emetine which was discontinued three days before death and yet living amœbæ were found in ulcers in the large intestine. There is one possibility which may be mentioned, of which similar instances are not unknown, and that is the drug although ordered, may not have been given according to the prescription.

Summary

Summing up conclusions as regards treatment I would say aspirate repeatedly in preference to drainage and if an abscess is almost pointing do

not aspirate there, for leakage will probably take place through the puncture, with the almost certainty of another infection being added. In those cases in which one has eventually to drain make a small incision through which a portion of a long rubber tube is inserted and then closely stitched to the skin incision. The other end of the tube is placed in a bottle filled with lotion by the side of the bed and the pus will then syphon over and there is very much less risk of septic infection. No special apparatus is at all necessary. In cases of doubtful diagnosis when a liver abscess has been opened by mistake I have recently been scrubbing out the cavity with gauze and then suturing completely, all the cases so treated broke down after healing by 1st intention, but the cure was certainly hastened.

Of cases in which the cause of death was noted, 6 had recurrent dysentery in two of which a further abscess or abscesses were found *post-mortem*, 3 cases noted as exhaustion, 3 of sudden death, 3 of general peritonitis, one with multiple abscesses as well, lung affections 2, infection of bile ducts 1, multiple abscesses with acute dilatation of stomach 1, moribund on admission, 3. Out of the series a few cases are worthy of special mention, e.g. No. 15 an abscess on the undersurface of the right lobe ruptured by the too vigorous examination of a number of students with a resulting general peritonitis and death.

No. 26 operated upon 3 years previously for the same complaint.

No. 33 was doing well and then developed an acute infection of the bile ducts.

No. 45 was admitted with symptoms of peritonitis in the upper abdomen, coelotomy was performed, an abscess found which had burst into the peritonium, the patient recovered after a long illness.

No. 75 was operated upon with a diagnosis of appendicitis though the mass was rather high up, he discharged typical liver pus in a day or two.

No. 76 was admitted with a distended abdomen and a flat hard mass in the right iliac and lumbar regions. Coelotomy performed and thinish red fluid evacuated P.M. Enormous liver abscess which had burst into the peritonium with multiple abscesses in the liver. The hard mass felt during life was a tongue-shaped prolongation of the liver.

No. 82 developed an acute dilation of the stomach for which no mechanical cause could be found *post-mortem*.

No. 88 septic pyelonephritis secondary to bacillary dysentery and No. 102 probably an amoebic abscess of the spleen.

India Abscess Cases

No.	Age	Cast	Duration	Days before operation	Where operated	Date of operation	Method of operation	Remarks
1	1	Hindu	2 mns	-	Benares Medical College Hospitl	Epiqas trum Right lower 11bs	Dramme	C
2	F	European	1 m	+	" present	"	Incision and drainage	C Mitral stenosis and phthisis, cocaine intoxication
3	M 52	Hindu	1 m	-	"	"	"	C Left lobe
4	M 25	"	1 m	+	"	"	"	D Recurrence dysentery P.M. Two more abscesses upper part R lobe one per for lung diaphragm, not affecting lung "Typical amœbic dysentery
5	M 28	*	1 ¹ /2 mns	+	"	R lower ribs Anterior axillary line	"	C Small abscess
6	M 40	"	2 mns	+	"	Epiqas trum	"	D Large abscess, typical pus Removed by friends
7	M 10	"	11 days	-	"	"	"	C Left lobe
8	M 39	European	12 "	-	"	"	"	D Abscess size of coconut Persistent dis charge, T°
9	M 35	Hindu	5 "	+ 2 yrs 1 ¹ /2 yrs prior	"	"	"	C Large abscess
10	M 36	French man	2 mns	-	"	"	"	C Typical pus
11	M 32	Hindu	few days	+ 2 mns before	Presdy General Hospitl Medical College Hospitl	R ribs in front cautilage resection. R ribs resection	"	D Operation outside hospital Admitted with sinus and septic Dysentery re cured
12	M 45	"	1 m	-	"	R semi lunar line R 7th space	"	C Small abscess practically pointing
13	M 25	"	3 ¹ /2 mns	-	+	Epiqas trum	"	C Very large abscess Pleur's not adherent, sutured
14	M 34	"	17 days	+ 4 yrs	"	R rec tus	"	C Abscess R and L lobes, recurrence dysentery, size of orange
15	M 30	"	"	"	"	"	"	D Doubtful diagnosis Tumour disappeared Shock Ceciotomy, matted omentum pus burst abscess under surface R lobe General peritonitis abdomen freely drained Death in few hours
16	M 45	Hindu	,	-	Medical College Hospitl	R lower ribs	"	C Small abscess pointing, bad condition

Liver Abscess Cases —(Continued)

Seq. No.	Age	Caste	Dwelling	Site of operation	Method of operation	Microbe found or not	Medicinal treatment	Result	Remarks		
									Where operated	Dysenteric	
17	M	38	Madras Hindu	3 ms	5th space mid axillary line	Incision and drainage	-	"	B'd condition, exhaustion	Dullness to 4th rib in nipple line, pain in juice expectoration, burst through lung	
18	M	22	Hindu	15 days	R. epigastrium	"	"	"	C	Small abscess Healed very quickly	
19	M	24	"	4 ms	R. lower ribs	"	"	"	D	7 years later, well offensive pus Pleura not adherent Lar	
20	M	26	"	20 days	L. costal margin, lectus	Cavity scraped, washed out with quinine solution	"	"	D	gish abscess bile stained discharge	
21	M	27	"	"	E. pigas thymum	Incision and drainage	+	"	D	Typical pus, not doing well, removed by friends	
22	M	26	"	1 m previous ly	R. epigastrium	"	"	"	D	Very anemic Developed small pox	
23	M	"	"	2 ms	R. rectus & long. R. ribs behind	Incision and drainage	"	"	D	Transferred Small abscess	
24	M	39	European	1½ ms previous ly	"	"	"	"	C	Large abscess under surface liver	
25	M	30	Hindu	2 ms	R. epigastrium	"	"	"	C	Pleura adherent Abscess size of small cocoon	
26	M	30	"	20 days	R. rectus	"	"	"	D	Death in 2 days	
27	M	38	"	1 m	R. epigastrium	"	"	Ipecacuanha	D	B'd condition on admission, peritoneum not adherent Recurrence dysentery	
28	F	31	English	5 wks	+	"	"	"	C	Small abscess Previous operation for liver abscess 3 yrs previous]	
29	M	45	Hindu	2½ ms	"	"	"	"	C	Admitted with sinus Hepatitis 5 months	
30	M	25	"	3 4 ms	"	"	"	"	D	Clean fluid purulent Small abscess Treated continued, explored. Rectus nothing found	
31	M	50	Hindu	2 ms	Gastr.	"	"	"	D	2nd abscess found behind capillary bronchitis	
32	M	45	"	1 m	Gastr.	"	"	"	C	Preliminary aspiration Bad condition Scrofula later typical Sudden death	
										D	Had burst through lung before operation
										C	Typical pus Improved, taken away by friends Biggish abscess
										D	Typical pus, bad condition Removed by friends

Liver Abscess Cases—(Continued.)

No.	Sex	Age	Caste	Duration	Dysentery	C ₂ H ₆ O	Where operated	Site of operation	Method of operation	Result	Medical treatment	Remarks
57	M	32	Hindu	17 days	-	+	Gaya	Epigastrium R	Aspiration 6½ ozs pus ", 7½ ozs pus	Ipecacum- unh.	D	No fever. Sudden death, yellow red pus P M Large 2nd abscess behind un opened opened Typical pus
58	M	50	"	5 ms	+ occasional	-	Gaya	Epigastrium	Aspiration 2 ozs quinine Aspiration 32 ozs pus, ½ oz. quinine solution	"	C	"
59	M	26	Mahomedan	2 ms	+	+	Lower 1 lbs behind	Aspiration 7½ ozs pus ", Aspiration 2½ ozs pus pus little Drained	"	"	C	"
60	M	27	Hindu	1½ ms	-	-	Medical College Hospital	Aspiration 10 ozs pus	"	"	D	"
61	M	38	Mahomedan	8 mos	-	-	Burdwan	Epigastrium	6 ozs 6 " 12 " 28 " 15 " 16 " 2 " 2 " 13 "	"	C	X rays negative Ipecac, no effect
62	M	30	Hindu	2½ mos	-	+	"	"	pus quinine solution pus quinine solution pus quinine solution quantity pus	"	C	Typical pus
63	M	30	"	1 mo	-	-	"	"	15 " 16 " 2 " 2 " 13 "	"	C	Thin yellow pus cured
64	M	55	"	-	-	-	"	"	20 " 6 " 22 " 1½ " 20 " 6 " 20 " 6 " 13 "	"	C	Absconded, seen later well
65	M	30	"	-	-	+ occasional	Lower 1 lbs and rectal larynx	Epigastrium	quinine 20 " pus	Ipecac + 1½ gr emetine P eme tine	C	Doubtful diagnosis abscess cleared out with grize and sutured broke down Bud condition Yellow sticky pus
66	M	28	Mahomedan	1½ mos	-	-	Lower 1 lbs front	Incision and suture, then drainage	"	Emetine 1 gr	C	"
67	M	20	Hindu	4 mos	-	-	Lower 1 lbs behind	Epigastrium	6 ozs pus, 17 ozs pus	Emetine 1 gr	C	"
68	M	50	"	1 mo	+ frequently	-	"	"	6½ " 14 " 7½ " 14 " 7½ " 14 " 6½ " 14 "	Emetino 1 gr	C	Thin reddish pus
69	M	30	"	6 mos	-	-	"	"	"	Emetene 1 gr	C	Typical, but thin pus
70	M	30	"	3 mos	-	-	"	"	"	Emetene 1 gr	D	Dysentery present. Death in 24 hours P M sub diaphragmatic abscess which had burst into peritoneum Autopsy not personally observed
71	M	30	"	1 mo	-	+ occasional	"	"	"	"	"	"
72	M	25	"	1 mo	-	-	"	"	"	"	"	"

73	M	48	Hindu	1 mo	-	-	-	-	-	Epigas-trum to lower rib	Aspiration 5 ozs pus		D	Yellowish thick pus, abscess probably mainly perihepatice	
74	M	28	"	1 mo	-	-	-	-	-	Lower ribs behind.	Aspirated 32 "		C	Treatment extended over 4 months, kept in Hospital for several days after each aspiration, then discharged, recurrence later. Confirmed opium eater.	
					- opium eater	"	"	"	"		20 "				
						"	"	"	"		30 "				
						"	"	"	"		24 "				
						"	"	"	"		40 "				
						"	"	"	"		27 "				
						"	"	"	"		12 "	*			
						"	"	"	"		26 "				
75	M	28	"	18 days	"	-	-	-	-	Cæzotomy to ribs below umbilicus	Incision and drainage		C	Mass R lower abdomen, like appendicitis but somewhat higher. Typical pus later	
76	M	30	Hindu	8 mos	-	-	-	-	-	Medical College Hospital	Incision and suture	Nu	D	Admitted with distended abdomen, flat hard mass, R iliac and lumbar region P M Enormous liver abscess which had burst into peritoneum, multiple abscesses in liver. Mass on R was tongue-shaped, prolongation of liver Admitted, discharging through lung, abscessed, probably cured	
77	M	50	"	8 mos	?	-	-	-	-	Burdwan front	Aspirated 8 o/s pus drainage	Emetine	C?		
78	M	60	"	2 mos	-	-	-	-	-	Epigas-trum	" 6 "	"	C		
79	M	25	"	56 mos	+	-	-	-	-		pus 92½ ozs	"			
						"	"	"	"		67½ "				
						"	"	"	"		70 "				
						"	"	"	"		30 "				
						"	"	"	"		20 "				
						"	"	"	"		48 "				
						"	"	"	"		15 "				
						"	"	"	"		4 oz syphon drainage	" 7 " 1 grs	D	Thick yellow pus L lobe Died, exhaustion in few days	
						"	"	"	"				C	Thick yellow sloughy pus	
80	M	40	"	1 mo	+	-	-	-	-	Epigas-trum to L	Aspiration 4 ozs pus, quinine solution injected Aspiration 8 ozs pus	-			
81	M	45	"	25 days	-	-	-	-	-	Epigas-trum	Aspiration 36 ozs pus, quinine solution injected Aspiration 26 ozs pus, Aspiration 20 ozs pus.	+			
82	M	20	"	6 wks	-	-	-	-	-	Lower ribs behind		13 " 1 grs	D	Developed acute dilatation of stomach, 80 ozs grass green fluid removed with tube, later 40 ozs P M one large abscess R lobe. Very sloughy walls. Very numerous multiple, early abscesses throughout rest of liver, about size of pea. Very many amoebic ulcers, large intestine living amebae found. Emetine discontinued 3 days before death. No mechanical cause for dilatation of stomach found Tongue shaped prolongation of liver downwards on R thick yellow pus	
						"	"	"	"				C	Much skin infiltration.	
83	M.	35	"	1 mo	+	-	-	-	-	Epigas-trum	Aspiration 22 ozs pus	-			
84	M.	22	Mahome dan Hindu	4 mos	-	-	-	-	-	Lower ribs front.	" 22 "	"	C		
85	M.	40	"	"	+	-	-	-	-	Lower ribs behind	" 2 "	"			
86	M.	28	"	16 days	+	-	-	-	-	"	" 22 "	"	D	Death, exhaustion in 10 days, coughing up pus 2 days before admission	
87	M.	32	"	1 mo.	-	-	-	-	-	Ribs in front	" 16 "	"	D	Typical pus but thin Vomiting, death in 8 days	
						"	"	"	"		14 "	"			
						"	"	"	"		12 "	"			
						"	"	"	"		36 "	"			
						"	"	"	"		12 "	"			
						"	"	"	"		12 "	"			

Liver Abscess Cases—(Concluded)

No.	Age	Caste	Duration	C, H ₂ O	Date of operation	Method of operation	Amœba found or not	Medicinal treatment	Result	REMARKS
88	M 25	EurAsian	4 days	+	Medical College Hospital	R semi luna line	Incision and drainage	- St. eptococci & Staphylococci	Emetine 3½ grs 10 grs	Acute dysentery 4 days, admitted 10th day, deeply rounded, cholema? Cholecystitis. Explor'd one small abscess found. Probably portal infection.
89	M 30	Sikh	14 "	+	"	Epigastrium Lower ribs behind	Aspiration 4 ozs pus	" 16 " " typical	D	
90	M 30	Hindu	1 mo	+	"	" 21½ " " thinned				
91	M 40	"	1½ mos	+3 years ago	Mayo Hospital	"	" 4S " yellow pus			
92	M 25	"	14 days	+	Medical College Hospital	Lower ribs behind	" 16 " " thinnest reddish yellow pus			
93	M 35	Mahomedan	2 mos	+6 mos previous ly	"	Epigastrium and lower ribs behind	Aspirated no pus Aspiration 70 ozs pus typical Re aspirated no pus			
94	M 35	Hindu	1 mo	-	"	Lower ribs behind	Aspiration 80 ozs brownish pus			
95	M 50	"	2 mos	-	"	" 56 " thin red, then thick yellow red				
96	M 20	"	16 days	-	"	" 46 " reddish pus				
97	M 28	"	"	2 years	"	" 10 " thick yellow pus				
98	M 35	Indian Chustian	3 weeks	"	"	" 6 " thick yellow pus				
99	M 39	Hindu	2 mos	-	"	" 40 " typical pus				
100	M 35	"	1 mo	+	"	" 11 " "				
101	M 18	"	2 mos	-	"	Lower ribs behind	" 4 " thick pus			
102	M 35	Mahomedan	35 days	+10 yrs previous ly	"	Long	Opened, cleaned with gauze and sutured Broke down, drained	"		
					"	E pigas trium	Aspiration 4 ozs typical pus	"		
					"	6th space behind	Aspiration 70 ozs thick yellow pus, re aspirated no pus, lower down	"		
					"	L semi luna line	Incision and suture	Emetine 3½ grs		
										Doubtful. Whether liver or spleen, typical liver pus though thin, sterile. Neither liver or spleen felt, too far over to liver. Healed first intention, reopened, healed rapidly with emetine

THE OPERATIVE TREATMENT OF HEPATIC ABSCESS *

By L A R NEWMAN, M D (Cantab),
Civil Surgeon, Alipore

This paper is chiefly, but not altogether, based on a series of 29 cases which have been admitted under my care at the S N P hospital during the past 18 months, with a provisional diagnosis of hepatic abscess. Of these 29 cases, 2 proved to be instances of sub-phrenic abscess entirely unconnected with the liver. One was a large right empyema displacing the organ downwards, and another was a breaking down gumma in a female, which was diagnosed from her past history and which cleared up quickly under iodides. The case was interesting as it presented all the physical appearances of a localized abscess pointing in the 8th intercostal space. Excluding these, 25 cases of true hepatic abscess remain.

I have tabulated a statement showing the details of age, duration, etc., the summarized results are as follows—All the patients were males, aged from 21 to 52 years. Third decade 8, fourth 8, and fifth 9, including one patient 52 years of age. The history of previous illness was 15 days in 3 cases, to 6 months in one instance. The average previous illness was little less than 2 months. About 50 per cent gave a previous history of dysentery, and 60 per cent admitted to taking alcohol. I need hardly add that all this information is very unreliable.

Of these 25 cases all but 2 were operated on. Of these one was admitted in a moribund state and died in a few hours, and in the other the abscess was already discharging through the lung and he left hospital at his own request a few days later.

Of these 23 cases, 15 were discharged cured after an average stay of 35 to 40 days in hospital and 8 died. The case mortality is therefore 35 or 1 in 3 cases. This mortality I admit seems high, but on looking back is not so much an expression of the severity of the disease and the comparative failure of operation, as it is an expression of the extremely advanced and neglected condition of these cases on admission, the majority were prostrated, some extremely so.

Cause and date of death are given in the following table—

		2 died within 24 hours of 50 and 35 yrs from shock and hyperpyrexia respectively
1 "	5th day	, 45 yrs Shock and exhaustion
1 "	6th "	" 40 " do do
1 "	10th "	" 30 " Complete eight lobai pneumonia
1 "	12th	, 52 " Exhaustion
1 "	18th & 13th days	et 45 yrs do (2 operations)
1 "	42nd day et 28 yrs	Sepsis

Exhaustion was thus the commonest cause of death, complicated by shock in 3 if not 4 cases.

Sepsis was definitely the cause of death in one case only. The death due to lobai pneumonia cannot be directly ascribed to the local condition which was steadily improving, but must in strict fairness be included. The one striking fact which might have been anticipated, is that 5 deaths out of the total occurred in patients over 40 years of age.

Topographically, a trans-thoracic incision was made in 8 cases, and an epigastric or abdominal incision in 12 cases. In one instance either an incision was made at two distinct operations (I shall allude to this case again) and in 2 I could find no record in the notes. In 1 case treated by trans-thoracic incision no adhesions existed, and partial resection of a rib or cartilage was only performed 3 times, in 2 cases treated by epigastric incision no parietal adhesions existed.

Symptoms and diagnosis—I only wish to touch briefly on one or two points, as treatment is so intimately associated with diagnosis. Clinically speaking I empirically divide these cases into 3 classes—

- (1) Incipient or threatening cases.
- (2) Intermediate (and often doubtful) cases.
- (3) Late or advanced cases.

Of class (1) we have had 3 or 4 cases in the wards. Unfortunately I have not been able to trace the notes. Thanks to Lieutenant-Colonel Rogers, there is no doubt of the treatment *i.e.*, emetine hypodermically, with such general measures as warmth locally, confinement to bed, a slop diet and saline aperients.

Class (3) presents less difficulty in diagnosis, the local appearances pointing conclusively to the existence of pus, though it may not always be easy to be sure of its exact situation. The great majority of my cases were of this class. The only points worthy of note are (1) that the temperature on admission is often subnormal and rarely above 100° F., and (2) that jaundice is usually absent or if present does not amount to more than a faint icteric tinge of the conjunctivæ. The treatment I adopted may be summarized in four words—free incision and drainage, combined of course with emetine hypodermically. Class (2) presents the greatest difficulty in diagnosis and consequently in treatment. Again I do not propose to consider the differential diagnosis, but I would lay stress on two points. (1) Repeated careful local examinations for any œdema of the integument *no matter how slight*, and (2) a leucocyte count. Of jaundice my experience is that it is usually absent or very slight, *pace* the text-books which glibly include the symptom as a usual one. If jaundice is definitely present I look upon it as a positive contra-indication of the probability of a true abscess of the organ and as an indication of inflammation about the biliary tract. I shall be glad to hear the experience of others on this point. Two cases

* Read at Medical Section of Islamic Society of Bengal

in point I recollect clearly, both were suffering from enlargement of the liver and marked jaundice, and in both pus was found in small quantity only by aspiration. In one of them an autopsy revealed the presence of multiple small abscesses of pyæmic nature.

Treatment—Emetine hypodermically of course which may settle the diagnosis by effecting a cure. Locally leeches may be advantageously be applied according to the patient's circumstances. Counter-irritants including iodine, are as certainly contra-indicated, as they will produce œdema and redness of the skin and obscure the local condition.

I now come to the crux of the whole question, viz., *the diagnostic use of the aspirator*.

The circumstances under which I am considering its use must be borne in mind. There is damp tenderness and enlargement of the liver. There is a slight to a well-marked leucocytosis. There is no definite œdema of the integuments. Are we justified in immediate aspiration for the purpose of making a diagnosis?

A few years ago I should have answered this question in the affirmative. With further experience I should qualify this considerably.

I am convinced that the aspirator has been a much misused instrument, and since the perfection of an aseptic technique, the occasions for its use are becoming increasingly rare. The chief danger of aspiration is of course internal haemorrhage. Some 14 years ago I lost a patient after exploratory puncture of a much enlarged liver. Two hours after the operation he suddenly became collapsed and died in less than an hour. The autopsy confirmed what was already only too obvious and I had not even the mitigation of finding an abscess. On talking this case over with a colleague he cited a similar experience and told me he had also heard of another within a short time. We have all heard of these cases, but it is obvious that the majority find no permanent record. The only safe conclusion for guidance in practice, is that the danger of internal haemorrhage after exploratory puncture of the liver is greater than authority would lead us to suppose. A further argument against the use of the aspirator in my experience is its unreliability. I have more than once extracted sufficient pus to induce me to cut down on the organ only to find an insignificant cavity. Per contra, I have also failed to extract pus when it was present in large quantity. I do not mean I have missed the abscess cavity, though this is always a possibility but that I have actually failed to aspirate pus through the cannula inserted into the abscess. Case No 3 of my series was a striking instance in point. Aspiration trans-thoracically revealed pus and a small abscess was opened and drained. At the same sitting the left lobe which was much enlarged was punctured and aspirated in two places through the epigastrium

without effect. The patient was but little better for these measures, and 5 days later I again aspirated the left lobe without effect. This time I was not deterred by the negative result but cut down and drained a large abscess full of typical liver pus. The patient died on the 13th day after the 2nd operation, and I regret that I relied too much on the aspirator and too little on my clinical observation. This is by no means a solitary experience, and such instances have led me to regard the aspirator as an aid to diagnosis with great distrust.

Another danger is an anatomical one. I refer to the risk of exploratory puncture through the abdominal wall in the epigastric or hypochondriac regions. The danger of puncturing other hollow visceræ is not great if the puncture is strictly confined to the limits of a definite swelling. But abscesses in these regions may originate in the gall-bladder or be confined to the lesser omental cavity as the result of duodenal or gastric perforation. Or further a true hepatic abscess may exist on the under surface of the organ at some distance from the surface and of course without the existence of parietal adhesions. Now in the absence of adhesions observe what may happen on aspiration. The pus under considerable pressure may leak alongside the cannula, or through the puncture wound when withdrawn and there is a definite risk of infecting the peritoneum. The presence of the cannula is further a hindrance to a clean incision, and when the parietes are divided the difficulty of packing off the general peritoneal cavity with pus oozing from abscess is considerably enhanced.

If on the other hand the abdominal wall is incised, with a sand bag placed under the lomb and no adhesions are found to exist, an excellent and uninterrupted field of operation is obtained. Preliminary packing is carried out with precision and certainty and the abscess is evacuated and drained with comparative ease. Supposing no abscess of any kind is found the exploratory incision can be closed without danger or risk to the patient and much valuable diagnostic information may be obtained.

I will cite my practical experience in support of these contentions. Two cases out of 27 proved on incision to be subphrenic abscesses. The second case is still fresh in my memory. The patient presented himself at the O P Department complaining of severe epigastric pain. Nothing more was seen of him for 1 month when he came up looking very ill and emaciated, with a tense bulging swelling in the epigastric region and the liver palpable for 2 finger-breadths below the costal margin, continuous with the swelling. It looked exactly like a typical abscess of the left lobe, but the event proved that the collection of pus was entirely distinct from the liver. As extensive parietal adhesions were present the

aspirator would have done no harm, but would not have been of the slightest assistance.

Three other cases which were under my care all well illustrate the possible dangers of indiscriminate epigastric puncture. Two occurred in the present series one some two years ago, in none of these cases did parietal adhesions exist. The latter case I will recount. The patient an elderly man, appeared to be suffering from hepatic abscess. The organ was enlarged and the margin palpable for 2 or 3 fingers-breadth below the costal margin, while there was an indefinite boggy swelling in the epigastrium. There was no oedema of the integument. As the physical signs were not very definite, I cut down through the right rectus instead of using the aspirator, and finding no parietal adhesions opened the abdominal cavity. A digital examination revealed the free healthy margin of the right lobe, and some 2 inches away from it, the commencement of an abscess sac sub-imposed on the undersurface of the organ. While performing an autopsy some years ago I met with an almost exactly similar case of a sub-hepatic abscess unrecognized during life, and wondered at the time how such a case would be dealt with in actual practice. When confronted with a similar state of affairs in the case recounted, the peritoneal cavity was packed off with gauze with some little difficulty on account of the depth and the abscess opened by Hilton's method. A drainage tube was inserted and the soiled pack replaced by a clean one which was removed on the 3rd day. An uninterrupted convalescence followed.

Now in both these instances the abscess could only have been aspirated by traversing not less than 3 inches in thickness of healthy liver in addition to the abdominal wall and I have grave doubts if it could have been reached at all. Supposing it had been, the danger of haemorrhage in the first place, and of pushing the drainage tube through the thin abscess wall in the second, and so infecting the general peritoneal cavity, would have been considerable. These cases first set me pondering on the proper proceeding in epigastric bulging, and with others, have convinced me that the use of the aspirator is contraindicated in the abdominal wall has to be traversed, unless the parietes are obviously adherent. In the case of exploratory puncture through the thoracic wall the anatomical conditions are different. Here there is no question of the possibility of puncturing any other organ but the liver. Further, by reason of the unyielding character of the thoracic wall incision has no advantage over puncture from a diagnostic point of view while it has obvious disadvantages.

I may summarize the objections to the diagnostic use of the aspirator thus—

- (1) Danger of internal haemorrhage
- (2) Unreliability

(3) The obscuration of the field of operation by pus if no adhesions exist.

(4) The danger of an intra-peritoneal leak if no adhesions exist, when passed through the abdominal wall.

Having thus reviewed its limitations I may formulate rules for guidance in its use for diagnostic purposes only.

1. The aspirator as a means of diagnosis of hepatic abscess should never be employed until all other diagnostic methods have been fully tried and have failed, they include repeated careful local examinations, a leucocyte count and emetine hypodermically.

2. Its use is only justifiable then on the conditions that (a) the patient has been prepared by the administration of calcium salts in full doses for twenty-four hours beforehand; (b) that the puncture is only made through the thoracic wall and never through the abdominal parietes unless they are obviously adherent, and (c) that preparations have been made beforehand to incise and drain the abscess at the same sitting in the event of pus in any quantity being found. This condition applies with even greater force to exploration and aspiration of the pleural cavity.

3. After its use with negative results a firm body roller must be applied and the patient kept as quiet as possible, while the administration of calcium salts is continued for 24 hours longer.

The use of the aspirator as a therapeutic agent— On its introduction many years ago, the danger of general and local infections consequent upon an open operation were imminent and real, but with the strides made in aseptic technique this is no longer the case. To advocate its continued use on the former grounds appears to me, to largely overlook the radical changes in the conditions under which modern surgery is practised. But to advocate its use on the grounds that infection from the atmosphere, or secondary aerial infection, is an imminent danger, following incision and drainage, is to wholly disregard the classical experiments of Tyndall and others, which were accepted by Lister himself twenty-five years ago, and strikes at the root of aseptic surgery as it is now practised. Secondary aerial infection is a chimera and everyday experience proves that it is so.

There is no denying the possibility of secondary infection after incision and drainage, but when it does occur, it is either due to duct infection from the skin, or to infection conveyed by the hands, instruments or dressings, etc., and is consequently largely preventible. The moral is obvious. The plea of atmospheric infection only confuses the issues, by distracting attention from the prevention of real sources of error. To my mind there is far greater danger in the continuous drainage of an hepatic abscess by a comparatively small cannula than by a free incision.

I am fully aware that there are cases on record of the cure of hepatic abscess after one aspiration. I have indeed had a personal experience of such cases. The fact is that there are abscesses and abscesses, and when you have a small localized and consequently quiescent abscess to deal with, it matters little what you do. Relieve the pus tension and nature will do the rest. Such cases are certainly the exception in native hospital practice. The case is quite different when you have an extensive and active abscess, and to rely on the aspirator as a routine measure appears to me to be too haphazard and opposed to sound surgical principles.

This criticism applies equally to such measures as aspiration combined with injection or irrigation with quinine or other solutions. I have some experience of injection with quinine, I used it in six or eight cases of small and localized abscesses, but all but one case to the best of my recollection had to be incised and drained eventually, and I felt very doubtful if the isolated case was a real rather than an apparent cure. I do not on physical grounds see how any chemical solution can get access to the active amoebae in the abscess wall. When you consider the physical qualities of hepatic pus it is difficult to believe that it will mix at all with any but an alkaline solution such as borax, and the amoebae free in the pus have done all the harm they are capable of at all events. I do not think that the injection of emetine directly into the abscess cavity can therefore be of much value.

In short I believe that when there is pus in any quantity in the liver the proper procedure is still to cut down and drain the abscess freely, with strict aseptic precautions of course. There will remain a certain percentage of cases in which simple aspiration may prove sufficient, but this must always be rather a fortuitous circumstance, and I do not think it can be relied on in the majority of extensive abscesses. Thanks to Lt-Col Rogers' discovery of the value of emetine, I believe the number of cases of hepatic abscess in educated Europeans and others who have medical assistance at hand will become very much fewer in future, in fact the statistics he gave us have already proved this to be so, but that we shall continue to see advanced cases in the uneducated poorer classes as before, is hardly open to doubt.

This was written before I had the advantage of hearing Lt-Colonel Rogers' views. From what he and Major Thurston have said, the rationale of the use of the aspirator,—preparatory to, or in combination with the exhibition of emetine hypodermically or intravenously,—is placed on an entirely original footing, and a new era of utility may be opening for it. I hold an open mind on the question and am prepared to revise my opinion on its therapeutic use as this marks

an entirely new departure in its purpose. At the same time I do not retract my opinion as to the precautions to be taken in practice. Though some of my arguments are beside the point, I believe that the truth of the conclusions based on actual experience still holds good. I foresee many avoidable disasters if the aspirator is indiscriminately or carelessly employed in future. Nor do I think that its use even when combined with emetine hypodermically can wholly abolish the necessity for incision and drainage. I may cite my last case though it is indecisive, as the patient eventually died. He was aspirated twice after an interval of one week and 26 ounces of pretty typical pus evacuated on either occasion. The immediate relief was considerable, but his temperature continued to fluctuate, and 5 days after the second tapping, the liver extended 3 fingers' breadth below the costal margin, as on admission, this in spite of the free use of emetine, $\frac{1}{2}$ grain twice daily. I then incised and drained the abscess evacuating a large quantity of thick pus. The temperature fell the same evening and he seemed much relieved. The discharge, however, continued free and he eventually died of exhaustion and I regret to think of septic complications also. I will now pass to *the practical details of the operation*.

1 Cut down over the most prominent part of the swelling, if the skin is not actually inflamed it will often be found oedematous. In the absence of such localizing signs, ascertain the most tender point and make the incision over it. The skin incision should never be less than 3 inches and should be parallel to the rectus in the epigastric region, to the costal margins in the hypochondriac region, and to the ribs in the thoracic region. The muscles should be split and not divided with the knife.

2 If adhesions do not appear to exist, cautiously explore with the fore-finger but on no account break down any there may be. If none exist, pack the space between the organ and the parietes with a strip or two of plain gauze, leaving an elliptical area about $1\frac{1}{2}$ inches in its long diameter.

3 On no account explore the liver with the knife, but plunge a pair of Lister's forceps into it with a boring motion by Hilton's method. If the capsule offers great resistance it may be punctured, and the forceps then inserted.

4 After the excess of pus has drained away insert two good sized rubber drainage tubes cyeletted at intervals, lumen 3-8ths of an inch in diameter. One should extend to the full depth of the cavity, the other may be shorter to act as an air vent. Tension each with a separate safety pin placed at right angles to the wound.

5 Next evacuate as much residual pus as possible with Bier's suction cup, or by turning the patient on to his face.

6 Reduce the size of the skin incision by one or more silkworm gut sutures suitably placed, and pack round the tubes with gauze

These are the steps in brief, but certain details need amplification

Anæsthesia—In very prostrate cases with large abscesses the rapid induction of shock under chloroform is striking, and in 8 out of my last 9 cases I discarded general in favour of local anaesthesia. The immediate results were certainly striking. The patient instead of being borne off the table in a state of collapse has often a much better pulse and a far more cheerful expression after the operation than he had before it. Case 22 of the series was a good instance in point. He was extremely prostrated, pulse hardly perceptible and pulse rate over 100. Before he was removed the pulse rate had fallen to 80 and the beat could be easily distinguished. The ultimate result shows no apparent improvement, as 3 out of these 8 cases died. But the fatal ending was deferred until the 5th, 6th and 10th days, respectively, and in the last case was directly due to complete lobai pneumonia, while another case described in the notes as "extremely prostrated," eventually made a good recovery. Though the number of cases is too small to dogmatize upon, I am satisfied that operation under local anaesthesia only increases the patient's chances materially. I use P D & Co's eudienine, 1c c or an ordinary hypodermic syringeful, and dilute it with 5 or 6 syringefuls of sterile saline and inject the whole quantity. In one case following Cile, I used a solution of quinine and urea hydrochloride for the deeper parts, as the anaesthesia lasts longer. The absence of haemorrhage at the time bespeaks care in haemostasis, or recurrent haemorrhage may occur later. All obvious vessels must be clipped and ligatured. An incidental advantage of local anaesthesia is that there is no need for haste.

If a rib has to be resected a general anaesthetic must be given, and speed is an important factor under these conditions. A good pair of rib shears is much to be preferred to a saw and bone cutting forceps. Rib resection which is advocated as a routine measure when the thoracic wall is traversed, is in my experience comparatively rarely necessary, 3 times in 8 cases, and I am satisfied it is better avoided when possible and held in reserve for special cases. There is usually ample room for 2 medium sized drainage tubes in the 8th or 9th intercostal spaces in the mid-axillary line, and the incision can usually be placed here.

When parietal adhesions are absent (pleural or peritoneal), the practice of suturing the serous layers before opening the abscess, recommended in the majority of text-books, is to my mind extremely unpractical. It is always difficult sometimes insuperably so. It takes much valuable

time and even when successfully performed, the stitches are very likely to cut out with the alteration of the relative position of the parts coincident upon the opening of the abscess. Gauze packing is the proper method to adopt, not only can it be rapidly performed, but it adapts itself automatically to alterations of position, and is therefore much more reliable.

Drainage—Two tubes, as I have remarked, should always be used if possible. With two tubes and due attention to posture after operation, there should not be the smallest difficulty in securing free and uninterrupted drainage, through an anterior or a lateral wound. I am not a believer in counter-openings posteriorly. It increases the severity of the operation enormously. I have seen cases with tubes sticking out of them in 3 and 4 situations. The scars left are often very painful. Such a state of affairs appears to me to be a confession of failure to secure proper drainage at the primary operation. Secondary sepsis too may be responsible for later counter-openings—a confession of failure in another direction. Suction with Bier's apparatus is a great help nowadays, but posture and the use of the double drainage tubes are our sheet-anchor.

I believe that surgical interference conducted on the lines detailed will afford the patient the best chance of recovery and will avoid complications. Strict asepsis is of course absolutely essential, both at the time of operation and during the after-treatment. The superficial dressings must be changed frequently at first, and later irrigation with a weak iodine lotion promotes healing. Bismuth paste or gauze packing will shorten the closure of subsequent sinuses. Emetine hypodermically should always be given as a routine measure.

EMETINE AND LIVER ABSCESS *

BY A H NOTT, M.D.,

LIEUT COLONEL, I.M.S.,

Superintendent, Howrah General Hospital

I PROPOSE to contribute only to the discussion what are my personal views concerning the best treatment of liver abscess and a few remarks on the value of emetine in pre-suppurative and suppurative hepatitis. In doing this I will refer briefly to two particular cases, one illustrating the value of repeated aspiration in a certain class of case of liver abscess, and I believe also the advantage of injection of emetine into the emptied abscess sac and of giving at the same time emetine by injection subcutaneously for some days after evacuation. The other case will, I think, give evidence from post-mortem observation of the direct action of emetine in limiting multiple

abscess formation, and suggests the possibility that under its influence small abscesses of the liver may become encapsulated and inspissate.

The first case was seen in consultation with Dr Suresh Nath Ghose, M.B., of Sylhet, Howrah. This appeared to be a very unfavourable case, a broken down old Hindu of nearly 60 years of age, who had led an exceptionally irregular life, one of these men who had been well-to-do and had dissipated his money in drink and other debaucheries. He had been under the treatment of homœopaths and quacks for two or three months, the homœopaths, although there was an evident large swelling of the hepatic region with palpable fluctuation, had treated him for phthisis. The temperature, it was gathered, had been persistently 102° to 103° F for weeks.

The above practitioner on being called in readily diagnosed the case and asked me to carry out the treatment. It was evident that incision with the necessary resection of ribs in this case would lead to death within a few hours, the general condition being so hopelessly bad. This case occurred during the very early days of the use of emetine and Colonel Rogers kindly supplied me with some ampoules of a solution of that drug.

The abscess was aspirated and over 50 ounces of thin but typical liver abscess pus was evacuated and 1 grain of emetine hydrochloride injected into the Sac and $\frac{1}{2}$ grain was injected subcutaneously twice a day for two days, and once a day for one or two days longer.

Immediate improvement in the general condition took place, the temperature becoming for some time practically normal, but in about a fortnight a small daily rise began again and the caved-in hepatic region began to fill out. Aspiration was repeated and from 30 to 40 ounces of pus withdrawn, probably at the first aspiration complete evacuation had not been effected as the flow unexpectedly came to an end. Injection of emetine both into the cavity and subcutaneously was repeated and from this time the rises of temperature ceased altogether and a fairly rapid convalescence took place. I saw the patient some six months later when it was feared there was further trouble, but after giving larger doses of emetine subcutaneously these subsided, and in spite of a still somewhat irregular life he is now in reasonable good health.

The other case was under closer observation. An European male, aged 50, treated in the Howrah General Hospital who had a history of very excessive whisky-drinking. He was admitted to hospital on July 12th, 1913, with a history of very acute dysentery of one week's duration, very frequent evacuation at first of little else than blood with some mucus. There had been a rigor with high fever and followed by severe pain just below the right costal

margin and below the right shoulder blade. The case on admission was clearly one of very acute sanguineous dysentery with hepatitis and the condition generally was extremely bad. He was given one grain of emetine by injection on the day of admission. The temperature the next day ranged between 102° and 103° and a leucocyte count shewed a high degree of leucocytosis (w b c 20,000). For seven days one grain of emetine was given twice a day.

The temperature chart showed that the temperature fell almost immediately and by the fourth day had become almost normal, but the general symptoms did not improve equally. The dysentery, although not so acute, did not clear up and pain in the hepatic region although daily less was still well-marked on pressure. Still the case appeared to be doing favourably, the white blood cell count having gone down to 14,600 on July 17th. But on July 18th he had a large motion consisting almost entirely of clotted dark blood which was repeated on the 20th, the blood then being brighter and passed more frequently. As the result of this haemorrhage for some days, his life was practically given up, but he gradually rallied. His blood count a few days after the haemorrhage shewed 28,000 w b c, a rise of temperature followed. A diagnosis at this time was made of multiple abscess of the liver, but locally there was no enlargement and nothing to point to the seat of abscess or abscesses and the general condition for some time precluded exploration, death on the table must have resulted.

Emetine in smaller doses was recommenced from July 23rd, and continued for six days, altogether 4½ grains being given. From this time until to end of July, there was gradual improvement as regard most of the symptoms, the temperature came down and remained nearly normal. The white blood count came down first to 14,000. Then on August 2nd to 10,000, the pain on pressure over the hepatic area gradually ceased and the dysentery only remained as a slight looseness of the bowels which later ceased and the stools became almost normal. The general condition however did not improve equally and there was practically no doubt of the presence of pus in the liver. Aspiration was considered and almost decided upon on many occasions after the condition had improved sufficiently to allow of this, but refrained from doing so owing to the absolute conviction that the suppuration was multiple and the entire absence of indication of locality.

The hope that the pus would inspissate and absorb became greater from the beginning of August, when improvement was much more rapid. Indeed, he appeared to be satisfactorily convalescing, temperature having been practically normal for over ten weeks. He was allowed

to take almost ordinary diet and to sit up in a chair, but after this on August 11th, he complained of a suffocating feeling, dysphonia set in and he died four days later without any rise of temperature, or recurrence of other of the earlier symptoms.

A partial *post-mortem* was allowed and it was found that the liver contained 5 small abscesses ranging from the size of a walnut to that of a hen's egg. The contents were a little thin cream-like pus. In addition, there were much other small dried up foci. Each of the abscesses was surrounded by a more or less extensive indurated almost fibrous capsule, in some cases nearly an inch in thickness. One of the abscesses was on the point of ulcerating through the diaphragm and no doubt this was the immediate cause of death. No active ulceration was found in any part of the intestines, but many scars were found. It could not definitely be ascertained where the haemorrhage came from, there was no evidence that it had come from a duodenal ulcer as had been suspected during life.

I think this case shows that emetine has the power to very materially modify the processes which go on in the substance of the liver surrounding the abscess points. I think there can be no question that in this case the emetine modified the very acute process in the acute early stage and its influence succeeded in prolonging life for over a month and only failed to effect a cure by a comparatively small margin and shows what emetine can do in cases where the pus can be evacuated. In this case the *post-mortem* shewed that aspiration could not have completed more than one or two of the abscesses and this only with great luck, the abscess in the dome must almost certainly have been missed. Although the amoebic cysts were not demonstrated in this case, I think the character of the dysentery is sufficient to class the case as one of amoebic abscess, notwithstanding the multiplicity of the abscesses.

With regard to the action of emetine in non-suppurative and presuppurative hepatitis, it is of course much more difficult to absolutely satisfy oneself of its value by actual demonstration, but my experience has been so strikingly successful in many cases as well as in acute amoebic dysentery that, in common I think with practically everybody, I am convinced of its extraordinary value, in fact, I think this has now been established beyond question.

There is as yet considerable difference of opinion as to the actual treatment of liver abscess, that is, as to whether aspiration with the injection of emetine is a sound practice or whether in all cases it is not better, more surgical, to drain by the open method. My present views are as follows —

1. I think aspiration is called for in that very serious class of large acute liver abscesses with

acute dysenteric symptoms and grave general depression and the earlier this is performed the better. I am convinced that drainage with excision of a portion of a rib in this class of case is a very fatal procedure. I advocate repeated aspirations with the exhibition of emetine both subcutaneously and into the cavity of the abscess after aspiration, though probably the former alone is equally efficacious and more certain. This procedure in some cases will be sufficient to bring about recovery, in others it will enable the general strength to be recuperated, the fever to largely subside and it may be possible after several aspirations to drain by the open method with some chance of success.

2. For large single abscesses of a less acute character seen in a later stage and in patients in reasonable condition, I would myself aspirate at least once, but in this class I quite think under good conditions as regards maintenance of asepsis that there is a good deal to be said for immediate incision and drainage.

3. For smaller superficial abscesses such as those met with in the left lobe of the liver, if diagnosed in an early stage I would aspirate, in a later stage when the skin is involved I would incise, in any case this class does well and statistics which include a number of such cases will always be good.

I conclude with a remark on the value of statistics in shewing the comparative results of different methods of treating liver abscesses. Without due consideration as to the class of patient and the circumstances which lead to their early or late appearance for treatment and without a due classification of the class of cases, I believe little in publishing such, attempts also to classify cases as above have been little convincing in my opinion.

EMETINE IN AMOEBOIC DYSENTERY *

By D MUNRO

MAJOR, I M S,

*Late 1st Resident Surgeon, Presidency General Hospital,
Calcutta, Civil Surgeon, Jalpaiguri*

FROM January 1st, 1913, I began to examine the stools of all cases of acute dysentery admitted into my wards with a view to determining the proportion of amoebic to non-amoebic cases, and also the value of emetine, both as a test of the variety of dysentery, and as a cure for the amoebic variety. Unfortunately it has not happened to me this year to treat many cases of dysentery, and, therefore, the data are too few for the compilation of reliable statistics. They are put on record, firstly, because I am about to leave this hospital, and, secondly, because, few as the cases are, the data concerning them may add to the value

* Paper read at Asiatic Society of Bengal

of those gathered from the experience of others. The scope of the enquiry as originally proposed was to divide into four groups the cases in which amoebæ dysentericæ were found in the stools, *viz.*, (1) a group treated by emetine alone, (2) a group treated by ipecacuanha alone, (3) a group treated by sulphates alone, (4) a group treated by Mist Oil Ricini alone, rest in bed and milk or whey feeds being a common factor in the treatment of all.

A similar plan was proposed for the non-amoebic cases. It was not found possible to carry out this plan rigidly because (1) from January 1st till date (September 15th), only twenty-two cases were treated (2) amoebæ were sometimes not found at the first examination of the stools, but found subsequently, and as the enquiry was especially directed towards the effect of emetine, I thought it better to put proved amoebic cases on emetine treatment as soon as amoebæ had been found. Differentiation of the types in bacillary cases was not attempted in this enquiry, chiefly owing to the difficulty of isolating B. Shiga and B. Flexneri from stools at the best of times, a difficulty which is almost an impossibility without an investigator who has his whole time to devote to the work. Other observations made on non-amoebic cases, as to the effect of different kinds of bowel washes, anti-dysenteric serum and Forster's vaccines (the latter in chronic cases only) are not included in this record, as the data are quite insufficient. The cases quoted here were all acute cases with griping and tenesmus, and frequent stools containing blood and mucus. As far as these twenty-two cases can be used for purposes of deduction, the following are the facts concerning them —

I THE NUMBER OF CASES IN WHICH AMOEBAE WERE FOUND

Amoebæ were found in 12 cases, *i.e.*, 53.6 per cent. The stools examined were always recently passed, and a warm slide was used. Any amoeba seen to be extruding hyaline pseudopodia was reckoned to be an amoeba dysenterica.

II THE NUMBER OF CASES IN WHICH AMOEBAE WERE NOT FOUND

No amoebæ were found in ten cases, *i.e.*, 46.4 per cent. It would be begging the question in this argument to state that three of these cases were really amoebic because they reacted quickly to emetine after treatment by sulphates had failed to effect an improvement. Yet such is a fact, and the presumption is borne out by another fact, *viz.*, that these three cases all had a history of previous attacks, a characteristic history in amoebic, but not in non-amoebic cases. My opinion is that the proportion of amoebic to non-amoebic cases in this series was 2 to 1.

III RELATIONSHIP BETWEEN CASES IN WHICH AMOEBAE WERE FOUND TO A HISTORY OF PREVIOUS ATTACKS

The relapsing nature of amoebic dysentery is well-known, and one would, therefore, expect to find that the cases in which amoebæ were found were the cases in which a history of previous attacks had been given. Only four, however, out of the twelve amoebic cases gave a history of previous attacks, whereas 5 out of the 10 cases in which amoebæ were not found gave such a history. It may be noted that if one counted as amoebic the three cases mentioned above as reacting quickly to emetine, although amoebæ were not found, and with a history of previous attacks, this would make the figures 7 out of 15, or nearly half. A further point in this connection is that in five out of the eight cases in which amoebæ were found, but in which the history was that of a first attack, the patients were sailors *i.e.*, non-residents in India, and therefore unlikely to have had much opportunity of contracting the disease. The data, therefore, on this point are insufficient for conclusions.

IV — THE NUMBER OF DIFFERENT TREATMENTS ON THE CASES IN WHICH AMOEBAE WERE FOUND

These cases number twelve and may be divided into 2 groups

(1) Those treated by emetine alone

Out of the 12 cases in which amoebæ were found, 4 were placed on emetine from the start. With the exception of local treatment in the form of alkaline bowel washes and starch and opium enemata for the relief of tenesmus, no other drug was used whilst they were on the emetine treatment. Of these 4 cases, in 2 the effect of emetine was rapid — blood and mucus disappeared and the stools became faecal. One had 3 grains and the other 2½ grains of the drug. One was in hospital for 14 days and the other for 17 days as it was judged wise to keep them in for this time after emetine had been stopped, in order to get them on to full diet and to regulate their bowels.

With regard to the other two cases, one died on the 5th day after 3 grains of emetine (grs $\frac{1}{2}$ b.d.). No post-mortem was allowed, but death was from peritonitis, presumably due to a perforated dysenteric ulcer (operation was refused). The stools were not improving before death. The other case had 5 grs of emetine (grs $\frac{1}{2}$ b.d. for five days), without much improvement. Emetine was then stopped and he was put on sulphate-treatment (Diachm II of sulphates 2 hourly) with 30 grains of ipecacuanha every night. This treatment failed to clear the stools of mucus, and he was finally cured by rectal injections of silver nitrate solution and Bismuth by the mouth. He was in hospital for 74 days and was diagnosed as a mixed amoebic and

bacillary infection His temperature chart suggested a bacillary more than an amoebic infection Of these 4 cases then in which amoebæ were found that started on emetine treatment 2 received immediate benefit and 2 received no benefit

(2) *Those cases treated first by sulphates alone, and then, sulphates having been abandoned by emetine alone the latter proving effectual*

These cases number eight out of the twelve cases in which amoebæ were found Of these 8 2 had Sulphate treatment for the first day simply until amoebæ had been found, and were then put on emetine They might almost be counted as cases put on emetine from the start, as the sulphate treatment could hardly have had time to take any effect Of these two cases, one had $2\frac{1}{2}$ gis and the other 4 gis of emetine, with an immediate beneficial result After emetine was stopped no other drug was given to either, except Ol Ricin for constipation

The other 6 cases received at the start sulphate or Mist Ol Ricin treatment for periods varying from 3 to 8 days on this treatment 2 only shewed every improvement, of these, one relapsed before emetine was started Emetine was then tried and all 6 cases cleared up on this drug alone One had $1\frac{1}{2}$ gis, two had 2 gis, and three had 4 gis Their average stay in hospital was 17 days

Of the 12 amoebic cases, then it may be said that 10 were cured by emetine, and that in 6 of these cases although sulphates were given a fair trial, except in one of them no improvement was noted from the sulphate treatment

V—EFFECT OF DIFFERENT TREATMENTS IN THE CASES IN WHICH AMOEBAE WERE NOT FOUND

These cases number 10 and may be divided into 4 groups

(1) *Those treated by sulphates only*

Four out of the ten cases were treated by sulphates only (Mag Sulph and Sod Sulph equal parts in saturated solution 2 drachms every two hours) In all 4 cases blood and mucus disappeared, and the stools became faecal in a few days Two cases required Bismuth later to check the number of stools, and to increase their consistency, and one was given Mist Ol Ricin for constipation They were in hospital 6, 10, 12, and 18 days, respectively Stools were examined more than once for amoebæ, but none were found

(2) *Those cases in which sulphate treatment was first tried, but stopped, as the patient was not improving at all, or improving very slowly and emetine being tried proved effectual*

Two of the 10 cases fall into this group—and it should be noted that both of these had a

history of previous attacks (*vide supra*) In both sulphate treatment was tried for 4 days, but stopped as it was not causing improvement Emetine was then started One case had $2\frac{1}{2}$ and the other 3 gis of emetine Both cleared up quickly and left hospital The one in 9, and the other in 15 days I suspect that these were really amoebic cases, in which, owing to faulty technique I had failed to find amoebæ The history of previous attacks, and the good effect of emetine after the failure of Sulphates bear this out

(3) *Those cases in which the emetine treatment having been tried first was stopped as it was proving ineffectual, and was followed by the sulphate treatment with success*

Two of the 10 cases fall into this group One had $2\frac{1}{2}$ gis of emetine—the stools still continued frequent and contained much mucus This case cleared up completely on sulphates and left hospital in 23 days The other case was definitely bacillary as shewn by examination of the stools 4 gis of emetine were given first, but with no effect at all Sulphate treatment afterwards proved effectual but it was combined with anti-dysenteric serum and bowel washes The case ran a high temperature throughout and was complicated by pneumonia He left hospital in 39 days

(4) *Those cases in which emetine was given after sulphate treatment had proved ineffectual; but in which emetine proved ineffectual also*

Two cases fall into this group Both of them were definitely bacillary cases, with high temperatures One was in hospital 38 and the other 44 days One had 2 gis, and the other 5 gis of emetine No improvement followed, anti-dysenteric serum, bismuth, and alargin bowel washes were probably responsible for the cure The serum was followed by remarkable improvement in one case, as was the alargin bowel wash treatment in the other

VI—RELATIONSHIP OF TEMPERATURE CHART TO TYPE OF CASE

As might have been expected, a persistent and high temperature was only found in the cases in which amoebæ were not found, and those cases in which emetine proved efficacious, although amoebæ were not found, did not run temperatures

VII—LIVER COMPLICATIONS

None of the 22 cases had any hepatitis or history of such

VIII—STAGE OF THE DISEASE AT WHICH THE CASES CAME UNDER OBSERVATION

The average number of days for which the 22 patients had been sick of the disease before admission to hospital was 81. Most of the cases were early and this should be taken into account in making deductions concerning the time taken to effect a cure, especially should this short series of cases be compared with a series of late cases, such as are met with in the hospitals for treatment of Indians only.

IX—MORTALITY

There was one fatal case, *i.e.*, a percentage mortality of nearly 5 per cent, which of course is too high to be really representative of the true mortality amongst early cases of acute dysentery.

Conclusions as to the effect of emetine

It is obvious in these few cases that emetine gave much better results in those cases in which amoebæ were found than in those cases in which amoebæ were not found. Four grains of the drug was the maximum amount given to any of the successful cases, and two grains proved sufficient in some. With regard to the length of stay of these cases in hospital compared with those treated by ipecacuanha before the days of emetine, it would appear from the hospital records that emetine has shortened the period of treatment, but to set this short series of cases against a long series of past cases of whose other circumstances nothing is now known, hardly seems fair. The only way to really compare Emetine with Ipecacuanha as to rapidity of effect, is to have a series of amoebic cases running parallel, the one treated by emetine only, and the other by ipecacuanha only. I regret much that I did not try to manage this, even with the very few cases I had to treat. Cases of hepatitis have naturally not been included in these notes, had they been, the rapidity of the effect of emetine as compared to ipecacuanha would have been more clearly brought out. Whilst unconvinced of the great superiority of emetine over ipecacuanha in cases of acute amoebic dysentery, as I have not seen them fairly tried against each other in a series of parallel cases as suggested above, the rapid and striking results that I have seen from emetine in cases of hepatitis (presumably amoebic) have convinced me of its superiority to ipecacuanha in this complaint. In conclusion, for lessons in examining stools for amoebæ, I would express my thanks to Lieutenant-Colonel Rogers, I.M.S., by whose request these notes are written.

NOTE ON AMOEBOIC DYSENTERY IN THE DARJEELING DISTRICT AND ITS TREATMENT *

BY DR C BALDWIN SEAL

I HAVE rough notes of about 70 cases treated with emetine, there have been many more treated in the district, but I have not been able to get particulars as it has been "Pujah" time and most of the native doctors are away.

Of the 70 cases which occurred in gardens at an elevation of from 4,000—5,000 feet, four cases were below one year of age. A couple of $\frac{1}{8}$ grain injections cured them. The other cases ranged from 1 year to 80 and the duration of the dysentery before treatment from 3 days to "many years" (This case was a man of 60.) The average dosage was $\frac{1}{3}$ of a grain. 3 cases in the 70 showed signs of collapse and one case which was given $\frac{1}{4}$ grain of emetine by the mouth died, this was a child of 6. One case showed no improvement and got well under quinine injections, one or two cases relapsed after 2 or 3 weeks, but were quickly cured with injections of emetine. One case had 3 relapses. This was a very old chronic case, the relapses all yielded to emetine.

The youngest case I have given emetine to was a half-caste child of three years, it was a moderately severe case, and $\frac{1}{3}$ grain of emetine cured it completely. My own personal experience is that $\frac{2}{3}$ of a grain twice a day will usually cure dysentery in from 2 to 3 doses, the largest number of doses I have had to administer is nine (in a European).

In the series of 70 cases mentioned above, 4 or 5 cases showed symptoms of limitation near the point of injection and one case developed an abscess.

On a neighbouring garden the manager informs me that the treatment has been uniformly successful, but that he has had a good many cases of small abscesses near the point of injection.

The injections in every case were made with an all-glass syringe which was boiled and the solution of emetine boiled before use.

My conclusions are—

1 That emetine hypodermically is practically a specific for the dysentery we get up here.

2 That the dosage should be from $\frac{1}{8}$ to $\frac{1}{3}$ of a grain for a child according to age, and $\frac{2}{3}$ of a grain for an adult at least. I mean to try 1 grain in future. I am also inclined to think that it should be administered twice a day.

3 The causation of abscesses is, I think, due to an attempt to sterilize the coolies' skin, this only shows up the microbes present, and they get pushed under the skin by the needle. I have

advised putting a flush of tincture of iodine on the skin and injecting through that. Another thing is that children and young people seem to respond more to treatment than old people.

TREATMENT OF LIVER ABSCESS *

BY JOHN D SANDES,

CAPTAIN, I M S,

Resident Surgeon, Medical College Hospital, Calcutta

I AM bringing forward records of 32 cases of liver abscess operated on by me in the M C H in the last twelve months. The statistics are somewhat misleading as they seem to show that opening and drainage is a more successful method of treatment than simple aspiration. This I do not believe to be the case. All the most serious cases were treated, in the first instance at least, by aspiration—indeed, the condition of many of them would not allow of any more prolonged interference. Those treated by incision and drainage include all the cases of abscess of the left lobe, which class of abscess, as a rule, is smaller and less serious than abscess of the right lobe, 21 cases were treated by aspiration alone, and of these 6 died. This seems a high proportion of deaths and so it is, but when we consider the conditions under which many of these cases were done and the extent of the mischief, I do not think the mortality at all great. A majority of my cases are operations of emergency done at all hours of the day and night immediately on arrival of the patient. Many of the cases are in an emaciated and some in a moribund condition, and it is almost questionable if any operative interference at all is justifiable in some even although one is quite aware that there is a liver full of pus waiting to be tapped. I have, however, always aspirated these cases, however bad, as it gives the only chance of recovery. Aspiration alone is permissible in these cases and this no doubt swells the mortality of the cases under this heading. All the cases of large right lobed abscesses in which there was no definite pointing were also treated by this method. Again, under this heading are included those cases in which the abscess had burst into the pleura. Many of the cases required more than one aspiration—one or two as many as four—as in case 19 of my series in which 90 oz., 48 oz., 40 oz., and 36 oz., were respectively drawn off at 4 successive aspirations and recovery followed. Case 29 was the biggest abscess I have ever seen, at the first operation 126 oz. pus were aspirated and a few days later another 40 oz. The patient was in an extremely low condition from the start and finally died. Of those that died, it is often noted in the notes that they are 'weak and emaciated' and there is little doubt that a fatal

result would have ensued no matter what treatment was adopted. A solution of quinine of strength 10 gr to the one ounce water was injected into the liver cavity after aspiration in a number of the cases and before the emetine treatment was adopted as routine was an important method of treatment and especially valuable in these abscesses of medium size containing about 20 or 30 ounces of pus. In these cases one aspiration followed by quinine injections often effected a cure. During the procedure of aspiration it is noticeable that the pus flows steadily out through the aspiration needle until the majority of it has been removed, then it comes more slowly in thick drops and finally there is often left a few ounces of thick residual pus that defies extraction by the aspirator. For these cases I adopt the very useful procedure introduced by Lt.-Colonel Stevens, I M S, of forcible aspiration by means of a strong metal syringe. The syringe is connected with the aspirating needle by means of a short stout piece of rubber tubing, and by exercising forcible suction as much as 10 or 15 ounces of very thickropy pus can often be withdrawn in addition to what has been taken off by the aspirator. There is perhaps a slight tendency for this forcible aspiration to cause some haemorrhage, and if much blood enters the syringe the procedure must, of course, be given up, but in my own experience I have never come across a case that has given rise to any anxiety in this way. I consider this is a most useful subsidiary method of treatment and I also think that it is in these cases that the injection of quinine is most useful. Very large abscesses almost always need a second and even a third aspiration, and I do not think these injections of quinine have as much effect in these cases until the second or third occasion when the abscess cavity has contracted down considerably. The point of aspiration depends of course upon the position of the abscess, but in the many cases in which there is no actual pointing but only general enlargement of the right lobe of the liver, I have found the posterior axillary line as high up as possible and consistent with safety to be the most satisfactory place. There is a tendency for right lobed abscesses, which form the large majority of all cases, to bulge downwards towards the abdominal cavity, and if these are aspirated too near the costal margin, there is a tendency as the aspiration proceeds for the abscess to retreat upwards towards the diaphragm and the needle thus becomes tilted and at times obstructed. If pus is not reached at the first puncture, it should be repeated, and if necessary many punctures in various directions made. The question of an anaesthetic is of great importance. Chloroform, I think is a most dangerous drug in case of liver abscess and if possible should never be given. Ether is less dangerous, but general anaesthetics are better avoided if possible. I have done the large majority of my aspirations

under local anaesthesia, and I have no doubt that in those grave cases of large right lobed abscess it has helped to bring about a successful termination of some of the cases. If Ethyl chloride is used to freeze the skin and a slight notch then made with a knife, the procedure of aspiration is to all intents and purposes painless certainly no more painful than tapping an ascites for which nobody ever thinks of giving a general anaesthetic. I have to a large extent, given up the injection of quinine into the abscess cavity, as I believe it is unnecessary now that we have emetine at our disposal. The usual procedure is now, after aspiration to give an injection of $\frac{1}{2}$ gr or 1 gr on the table (hypodermically), this dose being repeated daily for 6 days. This single daily injection is better than a smaller dose morning and evening, as the latter on account of the number of punctures tends to cause soreness of the skin.

Six cases were treated by incision and drainage with 1 death. Most of these cases were small left lobe abscesses some were pointing abscesses without any very marked enlargement of the liver, in which it was often difficult to say whether they were liver abscesses or merely superficial parietal abscesses. In either of the above cases aspiration is not a suitable procedure. The incision is made over the pointing portion and when pus is reached a finger is inserted and the abscess cavity explored. Drainage tubes are inserted and the pus encouraged to drain into pads of sterile wool. The difficulty is to keep these cases free from pyogenic contamination. A general anaesthetic is necessary in these cases and thus a new danger added that can be avoided in the method by aspiration. About 30 ounces of pus is the largest amount I have evacuated by this means.

Finally four cases were treated by aspiration followed at a later date by incision. All of these recovered. This method of treatment is a most useful one as a certain number—luckily not very many—fill up rapidly even after repeated aspiration. The patients often improve much after aspiration and by the time incision and drainage is performed are in a better condition to bear the operation. I have no doubt this continual drainage is necessary in some cases and it has its particular use in those cases of large abscess which have been improved, but not cured, by aspiration.

In conclusion then, aspiration is the method of choice and should always be attempted even in apparently desperate cases. The puncture should be made in the posterior axillary line as high up as possible. No general anaesthetic should be given and 1 gr of emetine should be injected hypodermically while the patient is in the theatre. Incision and drainage should be performed for the abscesses of the left lobe and

abscesses that are pointing, particularly if there is no great general enlargement of the liver. Free drainage by large rubber tubes should be provided. A combination of these methods is indicated when aspiration has not effected a cure.

EMETINE IN HEPATITIS, AND AMOEBOIC ABSCESSSES OF THE LIVER AND SPLEEN*

BY DR K. K. CHATERJI, M.R.C.S.I.,
Teacher in Surgery, Campbell Medical School

I HAVE tried emetine in the following classes of cases. These cases had either history of dysentery, the clinical features of which resembled amoebic type of dysentery or amoeba were demonstrated in the stools or discharges.

Group I—Cases of pericolitis following chronic amoebic dysentery. They had swellings in the right iliac fossa, their condition on admission resembling appendicitis. They did well under emetine injections.

Group II—In cases of pre-suppurative stages of amoebic hepatitis. In these cases there was a history of dysentery. The liver was considerably enlarged and very tender. Under a course of emetine the pain and tenderness disappeared and the liver dullness was diminished.

Group III—In cases of amoebic abscesses of the spleen. I had two cases which were treated by aspiration and emetine injection. They were cured.

Group IV—In cases of suppurating amoebic hepatitis (liver abscess). They were treated either by open operation or aspiration with emetine injection. The abscesses were opened (1) in cases of epigastric swellings with adhesions with the abdominal parietes (2) in cases where the abscesses had opened externally. In all other cases the abscess was aspirated and a course of emetine injections was given.

I have exclusively followed this latter method (aspiration with emetine injection) lately as it presented the following advantages over the open operation—

1. The shock of an open operation is great. It is practically *nil* after aspiration.

2. The open operation needs a prolonged convalescence and a longer stay in bed. For patients in hospital unnecessary expenses of dressing and diet. For private patients expenses for medical attendance and dressing, exhaustion due to a prolonged stay in bed. As house surgeon to Sir Havelock Charles in the Medical College Hospital I collected the liver abscess cases operated on by him during the years 1896—1904. Of the cases cured after operation numbering 59, the stay in hospital aggregated 229 days, giving an

* Read at Medical Section of Asiatic Society of Bengal

average stay of 35 days for each patient. The average stay in hospital of a number of consecutive cases treated by aspiration and emetine injection in the Campbell Hospital is 14 days. In this connection it has to be considered that most of these cases were detained in hospital to be kept under observation for about 4 days. This gives us an average of a necessary stay in hospital of about 10 or 11 days.

3 Chances of secondary infection which is practically unavoidable after an open operation.

4 Mortality is high in cases of open operation. This may be due to shock from the severity of operations, secondary infection, prolonged stay in bed, or other causes. I have collected results of liver abscesses cases treated by operation in the Campbell Hospital from 1909 to November 1913. The statistics are given below. During 1912 and 1913 all cases whether treated by open operation or aspiration had ipecac or emetine.

YEAR	Total number of cases operated	Total number of cases aspirated			Number of cases treated by open operation			Percentage of mortality		
		Total	Cured		Total	Cured		Died	Aspiration	Open operation
			Cured	Died		Cured	Died			
1909	5	1	1	Nil	4	1	3	Nil	75%	
1910 & 1911	13	9	8	1	4	2	2	Nil	11%	50%
1912 & 1913	30	23	22	1	7	3	4	4	3	57%

Consecutive number of cases of liver abscess treated in the Campbell Hospital by aspiration and open operation showing mortality—from 1909 to 1913.

Some consecutive cases of liver abscess treated by aspiration and emetine injection in Campbell Hospital

NAME	Date of admission	Date of aspiration	Date of cure	Number of days of stay in hospital
Bhag Shaik	8/6/12	10/6/12	22/6/12	12
Fati Ram	1-8/12	4/8/12	30/8/12	26
Bholanath	7-11/12	14/11/12	21/11/12	7
R C Manna	20/1/13	25/1/13	20/2/13	26
Ebrahim	26/2/13	27/2/13	11/3/13	16
R B Mukerji	12/3/13	13/3/13	29/3/13	16
S Jamman	11/9/13	14/9/13	19/9/13	5

Total number of days for 7 patients = 98 days
Average number of days in hospital after aspiration = 14 days

Abscesses of Spleen treated by Injection of Emetine

1 Aziz Mandal, 32, H M, adm 15-6-12, Faseer B Waid, discharged 13-7-12 swelling left subcostal region, a history of dysentery 10 days ago, bulging and fluctuation under subcostal arch, aspirated 16 68 ozs of pus, 9 emetine inj $\frac{1}{3}$ gr.

each, patient made a speedy recovery, pus on culture was sterile.

2 Debendia N Paul, H M, 20, Bowbazar st History of dysentery 3 months, cocaine, alcohol and ganja, was having homœopathic treatment, liver dullness increased, spleen much enlarged to the tender, liver aspirated 21 3 $2\frac{1}{2}$ pints of pus, spleen aspirated 22 3 4 ozs of pus, pus on culture sterile, changed to homœopathic treatment again.

EMETINE AND IPECACUANHA, THEIR AMOEBAcidAL VALUE IN PATHOGENIC AMOEbiasIS

By R MARKHAM CARTER, F.R.C.S.,

MAJOR I.M.S.,

Professor of Pathology, Giant Medical College, 2nd Physician, J J Hospital (offg)

IPECACUANHA, an ancient Brazilian specific for dysentery was introduced into Europe by Piso in 1658. Two years later this drug found its way to India. At first it was little used, but gradually and mainly due to the work of officers of the Indian Medical Service, it has risen to the position of an amoebacidal specific, more especially when the essential alkaloid emetine is used. Annesley, Twining, Parkes, Mackinnon, Morehead, Fayrer, Maclean and Cheveles, laid the foundations of our present advance in this group of diseases, but it is only in the last two years that science has shown us the more exact way of using ipecacuanha-root and its alkaloids. The history of emetine bears directly upon amoebic dysentery. Pelletier in 1817 isolated this alkaloid, and Bardsley of Manchester in 1829 tried the effect of this drug in a series of cases of dysentery and chronic diarrhoea with striking results. Sixty-two years later, Major Tull Walsh, I.M.S., treated a series of dysenteries with an average dose of 1 grain of emetine in 24 hours. His results with this alkaloid were so excellent that he published them in this Gazette under the title, "The Rational Treatment Of Acute Dysentery". In 1912 Vedder's experimental studies on the action of emetine upon living amoebæ clearly showed the constantly high amoebacidal action of this alkaloid upon saprophytic and pathogenic amoebæ. He further suggested the application of his results to pathogenic human amoebiasis. Professor Leonid Rogeis, I.M.S., improved upon Vedder's idea by administering emetine as an amoebicide hypodermically in cases of acute amoebic dysentery in Calcutta, and found it fulfilled the rôle in this disease Vedder had already indicated.

This is the summit of our advance in the treatment of this disease and one we shall presently show of enormous practical value. Following up the work of Rogeis in Calcutta, I introduced the emetine treatment of amoebic dysentery into

Bombay at St George Hospital in 1912 and was at once struck with the swift results obtained. Now that over eighteen months have passed and the emetine treatment is in common use in Western India, it seems advisable to criticize its value in all forms of amoebiasis, clinically as well as on pathological findings.

I have treated 168 cases in the last 18 months with emetine alone or in conjunction with ipecacuanha, and have come to the following conclusions —

Emetine administered hypodermically in doses of 1—2 grains per diem acts rapidly in early cases of uncomplicated amoebic dysentery in Europeans and Indians.

Emetine is valueless in bacillary dysenteries. Emetine is a specific in pre-suppurative amoebic hepatitis and is of marked value in chronic latent amoebic colitis which gives rise to the above condition.

The value of emetine in liver abscess is doubtful and rational operative treatment without the exhibition of emetine gives as good results as it does with the drug.

Before discussing these points further, we will deal with the action of ipecacuanha and emetine as checked by the microscope.

Ipecacuanha has no bactericidal effect upon B. dysenteriae, for it grows freely in a 1 ounce solution of ipecacuanha in broth.

It is doubtful if ipecacuanha exhibits the growth of any member of the bacillary dysentery group either grown in pure culture or in conjunction with the ordinary intestinal flora.

On the other hand, there is no doubt as to the amoebacidal action of ipecacuanha.

Emetine has a far greater amoebacidal effect than its parent drug and this is apparent in 24 hours in all cases of pathogenic amoebiasis. Both the pathogenic amoebae and the so-called harmless commensal amoebae rapidly vanish from the stools in early cases of amoebic dysentery on administration of a few grains of emetine hypodermically.

If amoebic dysentery has lasted for a week or more, we find that emetine injections destroy the vast majority of the amoebal trophozoites in the 1st 24 hours, but the stools rarely become amoeba-free under 72 hours.

Further, such cases of intestinal amoebiasis even after a week's injections and apparent cure by emetine, have in some cases a tendency to relapse.

The true emetine amoebacidal effect is delayed in patients who are confirmed opium eaters, and experience has shown me that in spite of vigorous emetine treatment, it is from the slaves of opium that we get our cases of rapidly fatal acute gangrenous dysentery. I believe this is due not to an antagonistic neutralization of the action of emetine by one of the many opium alkaloids, but to the effect of opium on the intestinal contents

whereby the amoeba-laden faeces stagnate in the pouches of the large intestine.

In the treatment of human amoebiasis, the doses of emetine for an adult should be at least 1 grain per diem, and in severe cases the drug should be pushed without hesitation. Minute doses of $\frac{1}{6}$ grain do harm instead of good, as I believe they so sensitize the residual store of undestroyed amoebae in the gut-wall as to render them emetine proof. Such cases pass out from the hospital apparently cured, but are amoebal carriers and sources of infection to others.

I am fully convinced that acute amoebic dysentery requires as well as the exhibition of the alkaloid emetine the entire root with all its alkaloids in powdered form. My standard daily dosage for an adult is 90 grains Pulv ipecacuanha in 5 grain pills salol coated and 1 grain emetine hydrochloride hypodermically. In the former we ensure the intestinal contents are thoroughly permeated with the drug. In the latter we reinforce the amoebacidal effect of the parent drug upon the parasites buried in the wall of the affected intestine by the hypodermic injections of emetine carried to these by the blood stream.

Another point of interest in the dysenteries of Western India is that mixed true amoebic and true bacillary dysentery of one variety or another is not uncommon. As yet we have no means whereby we may gauge the proportional relationship between these two groups of factors as regards virulence, numbers, etc., and it is these conditions of variability that tend to deceive the clinician relying mainly upon the effect of his treatment for his experience in this group of diseases.

Further, in cases of true bacillary dysentery it is not uncommon to find that periods of rapid multiplication of the so-called harmless commensal amoebal parasite occur.

To my mind these points indicate the necessity for further research. We require some exact knowledge of the chemical pathology of the dysenteries both as regards the effect of the toxins of the protozoal and bacterial factors upon the tissues and the food metabolites as well as the action of one or more varieties from either group upon the normal intestinal fauna and flora. I believe that where marked alteration in the intestinal flora has taken place as the result of dysenteric infection, with all its conditions of inflammation, toxicity, etc., the normal commensal parasitic amoebae have the power of assuming a pathogenic rôle, and exhibit a degree of multiplication which hitherto has passed unnoticed by observers in this field of work. Each year adds new varieties to a small list of bacillary dysenteries and we read of new types of amoebae with scepticism. Would it not be as well to turn our activities towards unravelling

the problem as to what it is that sensitizes to pathologic activity the protozoal parasites in cases of recurrent amoebic dysentery, for it is a fact we know practically nothing of the powers of symbiosis antagonistic or otherwise in the human intestine of any single member of all the dysenteries.

The microscopic study of all stages of amoebic ulceration throws much light on the value of the new emetine treatment in conjunction with the well established administration of powdered ipecacuanha.

The stages of this disease are as follows —

(1) Ingestion of cyst forms of pathogenic amoebae from the dejecta of an ameba carried in infected food, water, etc.

(2) The assumption of the vegetative trophozoite form by the ingested parasites, and then rapid multiplication in the cæcum.

(3) Invasion of the tubular glands, resembling the crypts of Lieberkühn that beset the mucus membrane of the large intestine.

(4) Penetration of the tubular glands by the vegetative trophozoites which are still rapidly multiplying. The points of penetration are the mucus secreting goblet cells, and through these the parasites invade the submucous layer of the large intestine.

(5) Rapid and localized destruction and ingestion of this layer by the invading amoebae which multiply freely *in situ*. This process of destruction is markedly assisted by the action of symbiotic bacteria that enter each breach in the mucous membrane with the amoebae.

Sections show, under the microscope, clusters of amoebae as they were following the walls of the capillaries. Others are seen in groups along and inside the small venules lying transaxially to the gut.

(6) The effect of this localized rapid multiplication of the invading amoebae and bacteria is acute inflammatory infiltration of the affected submucosal area. The blood vessels that nourish the undermined mucous membrane become plugged, and the mucous membrane is raised from its submucous bed in a degenerating condition.

(7) Necrosis of the undermined devitalized area of mucous membrane takes place, and this necrosed area is shed, leaving an ulcerated focus riddled with multiplying amoebae and bacteria.

(8) Progressive invasion of the muscular layers by the amoebae and bacteria continues until the necrosing ulcer base lays open blood vessels with varying degrees of haemorrhage. The ulcerated area may be ragged and uncovered or coated by a thick-felted mass of previous exudate inflammatory debris, germs and amoebae.

(9) The paracolic lymphatic glands and the mesenteric glands that are found at the forking of the blood vessels feeding the large intestine

may also show invasion by amoebae in the vicinity of ulcerated areas. This is however best marked in experimental dysentery in cats.

The whole pathological process above described shows there is an obviously selective attack made by the pathogenic amoebae upon the smaller blood vessels in the submucosæ. That especially directed to the smaller venules is of future interest. It would seem as if the red blood cells were the specially selected pabulum for pathogenic amoebae and that they leave the germ and food débris-laden gut lumen in their search for blood in the intestinal wall. This accounts for the relationship between amoebic dysentery, tropical amoebic hepatitis and amoebæ hepatic abscess, for free amoebæ perforating the finer tributaries of the portal vein can travel direct in this blood channel to the liver. It further shows the special lethal effect of the hypodermically injected emetine, as it is carried in the blood stream to exert its amoebacidal action at the actual site of invasion from the gut lumen and upon the young vegetative trophozoites in and alongside the finer blood vessels.

The microscopic pathology of amoebic dysentery, presenting as it does all stages from ulceration to repair, shows us why the gut lumen must necessarily be always laden with myriads of shed amoebæ, mucus, blood, etc.

It is only by the administration of finely powdered ipecacuanha root by the mouth in large doses that we can hope to destroy these free amoebal trophozoites breeding in the mucous laden gut contents and thus prevent the further invasion of healthy gut wall by these parasites.

In amoebic hepatitis a history of antecedent dysentery may or may not be obtained. It is not safe to rely on the previous history in such cases. The first sign of amoebic hepatitis is a sense of weight in the right lobe of the liver on physical exertion. This is rapidly followed by hepatic tenderness and subcostal enlargement of the gland accompanied by a fairly high rise of temperature. In a few days this temperature becomes remittent and is often mistaken for and treated for malaria. It is during this transition stage from constant high temperature to its intermission that I consider amoebic invasion of the liver takes place and the later exacerbations of temperature indicate active cyclical proliferation of the parasites *in situ*. My experience of abscess formation in amoebic hepatitis is that such takes place about the end of the second month after the onset of the hepatitis. The temperature and pain in amoebic hepatitis yield to long continued doses of ammonium chloride and saline purgatives, but it is my practice to administer one grain of emetine hydrochloride hypodermically every day as long as the liver is tender.

In any case of amoebic hepatitis if the condition of leucocytosis in the blood increases daily, it is an indication for the increased exhibition of emetine, and I do not hesitate to give 2 grains a day, equivalent to 180 grs of ipecacuanha hypodermically.

My experience of abscess formation in amoebic hepatitis leads me to consider it advisable to always suspect all cases of chronic pyrexia of uncertain origin with leucocytosis occurring in the tropics as being of the nature of amoebic hepatitis and to treat them accordingly. By emetine treatment I consider it is possible not only to cure amoebic dysentery giving rise to liver abscess *via* amoebic hepatitis, but to check liver abscess formation in its earliest stages.

I find, on the other hand, that once a liver abscess has formed the value of emetine has ceased and operative measures are alone sufficient. I have not noticed any marked curative acceleration of the condition of an amoebic abscess after drainage due to the amoebacidal action of the alkaloid.

In such cases, however, I occasionally administer emetine alone where there is any difficulty in drainage of the wound to prevent amoebal invasion of the external wound that rarely occurs. All cases of amoebic hepatitis are prone to develop liver abscess if exposed to conditions of chill and improper nourishment.

It is for these reasons that we find the majority of liver abscesses appear in those who have no home comforts.

The incomplete or imperfect treatment of amoebal dysentery results in a patient's becoming a carrier of amoebal infection to others. Such carriers are characterized by their liability to attacks of amoebic hepatitis and amoebic colitis.

Emetine treatment being a more vigorous and scientific administration of the specific amoebicide tends to diminish the number of amoeba carriers in a community, just as the intelligent intensive administration of quinine reduces the malarial factor.

If this drug is administered in the early stage of pathogenic amoebiasis in sufficiently lethal doses it has a high economic value to the state reducing the further incidence of amoebiasis of all varieties.

Anti-amoebic prophylactic treatment of amoeba carriers should be instituted in all great Eastern cities and placed in the hands of trained microscopists. The present practice of discharging convalescent cyst carriers from hospital is criminal in the tropics where the habits of the natives allow of infection being so readily spread by the encysted stage of the entamoeba infecting food and water supplies.

The microscope does not always aid even a trained observer, but in the vast majority of cases it is the most valuable weapon we have for exact diagnosis.

Some years of microscopic observation on material drawn from cases of amoebic dysentery leads me to believe that there is but one pathological variety of amoeba for man.

The correct reproductive cycle of this parasite is that usually assigned to *E. tetragena*. The name of this parasite however should be *E. histolytica*. There is much obscurity amongst workers in this field as to the exact relationship between the various varieties of amoebae that have been described as pathogenic for man. We believe many have been confused by cytological degenerations of the two varieties, the non-pathogenic commensal amoebacoli and the pathogenic *E. histolytica*. We consider that there is but one pathogenic form and that *E. tetragena* and *E. histolytica* are identical.

With regard to emetine treatment, I feel we owe a great debt to Vedder for his research work and to Lt-Colonel Leonard Rogers for his brilliant application of laboratory research to practical tropical medicine.

In a series of 120 cases of amoebic dysentery in Indians and 39 cases in Europeans, I find of the cases cured, the average duration of the disease before the patient seeks hospital treatment was 10½ days and 2½ days respectively.

The average total dosage of emetine to cure a case was 3½ grains and 2 grains respectively. Of the cases that died, the average duration of the disease before the patient sought hospital treatment was 44½ days. The average total emetine given before death was 4½ grains.

The dose varied from ½ gr per diem to 1 gr per diem.

All cases received pulv. Ipecac 15—30 gr, 3 times a day in salol coated pills, these were given half an hour after taking 15—20 minim of Tinct Opii.

Other drugs used were Bismuth salicylate, Bismuth subnitrate given in conjunction with tannic acid and catechu.

AN EXPERIENCE IN THE USE OF EMETINE IN THE TREATMENT OF AMOEBOIC DYSENTERY

BY A WHITMORE, M.D.,

CAPTAIN, I.M.S.

Pathologist, Genl Hospit, Rangoon

In this short account of the results of the use of emetine in the treatment of Amoebic Dysentery in this Hospital, I propose making use of the material in one block only of the Hospital wards. I do this because I believe that in any discussion upon the value of a recent method of treatment it is advisable to ensure that the conditions of the particular contribution to the debate should be as uniform as possible.

The wards with which I am concerned probably correspond to a certain extent with the wards in Calcutta in which, under the direction of Lieut-Colonel Rogers, the utility of the drug was first satisfactorily demonstrated. For they are within a very short distance of the Laboratory, and are under the direct control of the Pathologist, so that facilities for laboratory diagnosis are available, and the general spirit of the wards favours an attempt at exact diagnosis. However, the patients are generally pauper, friendless natives of India, so that from the point of view of physique and general nourishment they constitute the most unfavourable class of patients of any in the hospital.

During the last nine months I have adopted subcutaneous injections of emetine as the routine treatment of those suffering from amoebic dysentery, as soon as the diagnosis has been established. In the majority of cases there has been no difficulty in arriving at a diagnosis within 36 hours of the patient's admission to hospital in the first place, the diagnosis depends upon the history of the illness, general condition of the patient, and character of the stools. I should like to suggest that in cases seen within the first six days of the onset of the intestinal disease a correct diagnosis can generally be made upon this clinical examination alone. A good deal is written upon the difficulties of the clinical diagnosis of dysentery during the last few years. I have been constantly dealing with cases of large bowel inflammation, the diagnosis have been regularly checked by reference to the neighbouring laboratory, and I have come to the conclusion that once a fair experience of faecal examination in the wards has been acquired, it is rare indeed that a correct diagnosis of amoebic dysentery cannot be made upon clinical examination alone, if the case is seen within the first week of the illness. If deprived of a microscope, I would have much more confidence in my speedy clinical diagnosis of amoebic dysentery, than I would in that of malarial infection. It is in the latter stages of amoebic dysentery when the symptoms have become those of chronic diarrhoea, that a clinical diagnosis becomes difficult, and a careful microscopic examination essential.

However, in all the cases which have been treated with emetine the diagnosis has been confirmed by a microscopic examination. It is our experience that in untreated cases, if fresh stools are secured this microscopic examination is almost as easy and as satisfactory as that of the blood of malarial cases for malaria parasites.

In the 34 cases with which this note deals, the treatment adopted has been injection of emetine generally in $\frac{1}{2}$ gram doses twice a day until the stools are reduced in frequency to 2 or 3 in the 24 hours and are free from mucus and blood—so that upon a careful microscopic examination—

(this of course means washing, the diluted faecal matter being slowly poured over a white porcelain sink)—the stools appear to be normal, soft stools, save perhaps for some undigested food material. We have not adopted as a routine measure the daily examination for amoebae. In view of the occurrence of relapses I expect that a careful microscopic check would be useful as a guide to the suspension of the energetic use of the emetine, but for this our laboratory staff is too small.

In the majority of our 34 cases acute dysenteric symptoms have ceased, and the stools assumed a normal character after 4, or at the most 5, days of hypodermic emetine treatment. For the rest of their stay in hospital the patients are given small doses (grains x—xv) of Pulv ipecac twice or three times a day, unless treatment for some other disease such as malaria is required.

Until quite recently this emetine treatment has had the surprisingly rapid and certain effects which Lt-Colonel Rogers has stated to have been his experience of the use of the drug. Among the 34 cases we have had 4 deaths, but these deaths do not detract from my high opinion of the efficacy of the drug. In one case the patient, who had been admitted with symptoms of "gangrenous" dysentery, had been discharged quite free from dysenteric symptoms and rapidly convalescing after a few weeks' stay in hospital and a 10 days' emetine treatment. Three weeks after his discharge he returned to hospital in an emaciated condition, having been deserted by his friends. He died of "general debility" six weeks later, and at the *post-mortem* examination his large bowel was found to be much scarred, due to healed, large, dysenteric ulcers, and in the lowest third to be the seat of early terminal bacillary dysentery. His extensive amoebic dysentery had been entirely cured by the 10 days' treatment with emetine.

A second case died 12 days after admission. The patient was an old man, aged about 65 years. He had been admitted to hospital for general debility, with ascites and general anaemia of some two months' duration. His stools were observed to be dysenteric, and continued amoebae histolyticæ. After 6 days' emetine treatment his dysenteric symptoms had subsided, but he died 12 days after his admission to hospital. At the *post-mortem* examination his large bowel was found to have several very large dysenteric ulcers, but these were all clean, and showed signs of rapid healing.

The third case was an old Mahomedan, aged about 70 years admitted for fever and cough of about 14 days' duration. He was found to have a large liver abscess, in the pus of which amoebæ were easily found. The abscess was drained by closed drainage and emetine

administered, the temperature previously 101° fell to normal immediately, and remained normal but the old man gradually became weaker and died 6 days after admission to hospital. A post-mortem examination was not obtained.

The fourth fatal case was that of a Hindu male, age 20, who was admitted to hospital very seriously ill. He was a very anaemic, ill-nourished man who had been engaged in coolie work in the jungle, and for the last four months had been out of work owing to ill-health. He was extremely debilitated, and was found to be suffering from active malaria and acute amoebic dysentery. After 5 days' emetine treatment his dysenteric symptoms had ceased after 7 days' treatment of $\frac{1}{2}$ grain twice daily the emetine was stopped, but 3 days later the dysenteric symptoms returned and emetine was again administered. He seemed to be doing well but died quite suddenly in the early morning after 15 days in hospital. There was no post-mortem but I believe that he died during an acute attack of malaria and not from his dysenteric infection, which judging from clinical signs had been controlled.

Until the last six weeks my experience had been that emetine, administered in $\frac{1}{2}$ grain doses twice a day very rapidly checked all the clinical signs of amoebic dysentery, and I was very strongly of opinion that in emetine we had as certain a cure for amoebic infection as in quinine we have a certain remedy for malaria. But just as in malaria relapses are not unusual so in dysentery treated with emetine relapses have not been rare among the patients in my wards. Among 25 patients we have had 5 relapses. The following will serve as a characteristic example of a relapse some little time after the cessation of all acute symptoms — A moderately nourished Hindu, male, age 45 years, admitted for dysenteric symptoms of one month's duration, the stools contained amoebæ histolyticæ and the temperature upon admission was 102. After 5 days treatment with $\frac{1}{2}$ grain of emetine hypodermically twice a day, the patient was considered convalescent, and was free from dysenteric symptoms, but 16 days later these symptoms returned, and after a course of Pulu ipecac lasting 14 days the patient was discharged apparently well.

The other cases of relapse were very similar to this, and with a view to prevent relapse the patients are now placed upon small doses of "ipecac" after the preliminary 5 to 7 days' emetine treatment. It is too early to determine whether or no the continuation of a mild course of "ipecac" after the dysenteric symptoms have ceased is of value or not.

With the exception of the occurrence of relapses, my experience of the use of emetine as a remedy for amoebic dysentery had been entirely

satisfactory until some six weeks ago. About the end of December, and the beginning of January we receive at the hospital a number of patients who are returning from the annual paddy harvest. These patients are usually very poorly nourished and have been sick often for a month or more before arriving at hospital, they are suffering from a multiplicity of ailments generally malaria combined with diarrhoea or dysentery. Six such patients admitted to my wards were diagnosed amoebic dysentery and treated with emetine. This treatment has been apparently unsuccessful, so much so that I doubted the efficacy of the brand of emetine which we were then using. The drug was a preparation by a well-known and reliable firm of chemists and the Chemical Examiner reported that a sample conformed to all the usual tests for emetine. As our diagnoses had been made carefully, and there seemed no reason to doubt their accuracy, I could form no other hypothesis than this of an inefficient preparation of the drug, and accordingly applied for a supply of different manufacture. However before this has been received three of the patients have died, and the post-mortem examinations are certainly helpful in elucidating the apparent failure of the emetine treatment. I give very briefly the illnesses and post-mortem findings of these three patients.

1. A Hindu age about 60 poorly nourished admitted for dysenteric symptoms of some 3 weeks' duration. The stools were faintly characteristic of amoebic infection and amoebæ histolyticæ were reported as present. Emetine grain $\frac{1}{2}$ bis die was given hypodermically and after 3 days the stools had improved but they contained much mucus in which amoebæ were still found. The emetine was increased by $\frac{1}{2}$ a grain daily but after 7½ grains had been administered our supply fell short and ipecac by the mouth was substituted together with bowel wash-outs of dilute V ipecac. The stools did not improve and at the end of three weeks a few small inactive amoebæ were reported to be present still in the stools and the diagnosis of amoebic dysentery was maintained. A second course of emetine of 5 days' duration was tried, but the diarrhoea with blood and mucus in the stools continued. The patient died about a week later and at the post-mortem examination the lower half of the large bowel was found to be the seat of active subacute ulcerative colitis not amoebic (no amoebæ could be found in scrapings nor were the lesions those characteristic of amoebic infection), in the upper portion of the large bowel were several large radiating scars such as we have been in the habit of attributing to healed amoebic ulcers. I am quite confident that this patient did not die of amoebic infection but I believe that our initial diagnosis was quite correct, though it overlooked the possibility of the more chronic

bowel ulceration complicating the amoebic ulceration. The finding of "small inactive amoebæ" in the stools would have gone for nothing in the preliminary examination, but the diagnosis of amoebic dysentery having once been made, and looked upon as certain, we did not question that these amoebæ found later on were of the pathogenic variety, so far as I am aware we did not endeavour to do more than note the presence or absence of amoebæ.

2. A Hindu, male, admitted about the same time as the last case. Diagnosis of amoebic dysentery made upon both clinical and microscopic examination. Emetine $\frac{1}{2}$ a grain twice a day was administered for 5 days and seemed to be successful, the stools, from 11 or more in the 24 hours had become 3, and were practically normal. On the 6th day the temperature rose and the diarrhoea returned. The temperature remained irregular and blood and mucus again returned to the stools. The laboratory failed to demonstrate amoebæ, but as the diagnosis had been so certain, and the stools were again so obviously dysenteric, no great importance was attached to this negative finding and emetine was again given 5 grains were given without any effect, and as at this time suspicions had been roused that the preparation of the drug was faulty it was suspended and Pulu ipecac given, but without benefit. About a week later the patient died, and characteristic acute lesions of bacillary dysentery were found in both small and large bowel, and also scars of recent amoebic ulcers in the large bowel. The exact bacillary infection has not yet been worked out. I have not the least doubt but that this patient had amoebic dysentery when admitted, and that this was cured by his first course of emetine. His bacillary infection was clinically distinct, and was perhaps contracted in hospital, but biased as we were by the preliminary diagnoses we were unable and unwilling to attach significance to the signs which ought to have led to a correct diagnosis.

3. A Hindu, male, age 30, very ill-nourished, and very seriously ill with dysenteric symptoms as before a diagnosis of amoebic dysentery was made and seemed certain. Treated with emetine he improved, but did not make the startlingly rapid recovery usual in amoebic infections. After $7\frac{1}{2}$ grains of emetine his stools were faecal, but mucus was still present in fairly large quantities and his disease appeared still active. However the laboratory examination now gave an uncertain result, and it was upon clinical signs that I relied in determining that active dysentery was still present. Later a further more prolonged course $13\frac{1}{2}$ grains of emetine was tried, but although the patient was slowly improving, his stools were still frequent and contained mucus. He decided to leave hospital and return to his

friends. A week later he was picked up dead close to the hospital. At the *post-mortem* examination it was found that the dysenteric ulcers were healed, but they had been extremely extensive, so that in many places only small islets of mucus membrane had been left and these were oedematous and unhealthy, but not ulcerated. amoebæ were not demonstrable. The explanation of the case was clear the original dysenteric ulceration had been so extensive that after all amoebic activity had ceased restoration of proper formation was impossible at any rate apart from a tedious and prolonged convalescence and although the clinical symptoms passed from those of acute amoebic dysentery to those of chronic, or subacute, symptoms were due to the continued presence of living amoebæ, *i.e.* that emetine had failed to cure the amoebic infection.

Space forbids that I should further discuss this experience of the emetine treatment at any length but it seems to me that in any discussion upon the efficacy of a new remedy it is of the highest importance to examine very carefully all apparent failures. For if the drug be successful at all, there is an irresistible tendency to exalt unduly its successes and to be blind to its failures. However, though at first sight I thought it certain that these particular cases were clear examples of the failure of the Emetine treatment—for in all the correctness of the diagnosis upon admission was supported by good and sufficient evidence—yet I am now satisfied that so far from being examples of the failure of emetine they are striking evidence to the contrary. Instead of attributing the non-recovery of these patients to some fault in the drug as at first I was inclined to do, the *post-mortem* findings compel me to admit that the explanation lies in my faulty diagnosis. I think that this diagnosis was correct in the sense that these patients were suffering from an amoebic infection, but such was but a part only of their ailment. From a fairly wide experience in mortuary work I am well aware of the common complexity of bowel infections among starved, neglected, native patients, but it is difficult always to keep this knowledge in mind in making the clinical diagnosis. Moreover in laboratory work it is not easy to free one's mind from the bias of a first satisfactory examination, when examining material for the second or third time. If at the first examination of faecal material undoubted amoebæ histolyticæ have been found, it is not unnatural that at subsequent examinations a false importance should be attached to the presence of inactive forms of amoebæ of doubtful species, and unfortunately in many cases of large bowel disease amoebæ other than amoebæ histolyticæ are present, and are probably of no particular significance. I believe that an experienced

laboratory worker can distinguish such amoebæ, but considerable care is always necessary.

At any rate, whether my preliminary diagnosis in these cases was correct, or not, the cases themselves are interesting, for, apart from the evidence furnished by the *post-mortem* examinations, they would have been quoted as failures of the Emetine treatment, and it seems to me that upon paper at all events the evidence of that failure would have been particularly strong.

THE EMETINE TREATMENT OF DYSENTERY AND ALLIED LIVER CONDITIONS IN KATHIAWAR

BY A HOOTON,

MAJOR, I.M.S.

Agency Surgeon, Rajkot

IN Rajkot, the head-quarters of the Kathiawar Political Agency, there is very little severe dysentery, and most of the really serious cases treated at the West Hospital come from other places. There has thus been no opportunity of giving Lt.-Colonel Rogers' Emetine treatment an exhaustive trial, but the following cases may be of interest, so far as they go —

(1) H H, aged 40, weaver, admitted into the West Hospital on the 12th November 1913. He stated that he had been suffering from chronic dysenteric symptoms for the last twelve months passing seven or eight stools a day, with some tenesmus, the stools contained blood and slime.

On admission his stools were found to contain a considerable amount of blood, in the form of clots, and mucus. He was put on milk diet, and the same evening emetine treatment was commenced ($\frac{1}{2}$ grain tablet dissolved in 10 minims boiled water, morning and evening). This was continued daily. For two days there was no apparent result, on the third day a slight improvement took place in the stools, on the fourth the condition was much the same, but on the fifth a complete change appeared. The stools were almost normal in character, and not a trace of blood or slime was found. One more injection was given the same evening and afterwards the drug was discontinued. The man remained in hospital for the week following, and his stools were examined daily, with the same result.

Sub-Assistant Surgeon Kahandas J Tana carried out the treatment and has supplied the notes of the case.

(2) An adult male, Mahomedan, whom I saw some months ago privately. A diagnosis of liver abscess following dysentery was made, and operation advised, but he returned to Poibandal his native place, not being prepared to submit to operation at the time. For

further details I am indebted to Dr Mascarenhas, who opened the abscess later and inserted a small drainage tube. Drainage was apparently somewhat restricted, and Dr Mascarenhas was not satisfied with the progress of the case, when suddenly, eight days after operation, a violent attack of dysentery occurred. Treatment with hypodermic injections of emetine was then commenced, and was followed by the disappearance of the dysenteric symptoms in a few days, and this satisfactory result was accompanied by a most marked improvement in the liver abscess. To quote his medical attendant, "the abscess seemed suddenly to dry up, the discharge diminished, the temperature became normal, and the sinus healed in a few days. The patient has been under observation for some time since, and the cure appears to be permanent."

(3) A European male, of about 30 years. For the following account I am also indebted to Dr Mascarenhas, with whom I saw the case in consultation.

In December last the patient had an attack of acute dysentery, with the usual symptoms, tenesmus, blood and slime in the stools. The attack was severe, and in a few days he was much prostrated. Treatment with large doses of ipecacuanha by the mouth was early commenced, and continued for 6 days, without any apparent effect. Emetine injections were then resorted to, and in 3 days the blood and mucus disappeared from the stools. The patient has since made good progress.

(4) Emetine has been recently used with success in the West Hospital in another case in which ipecacuanha had failed, and Assistant Surgeon Kothaiy, of the West Hospital, reports that he has had excellent results from the drug in two other cases in which he had tried the saline treatment without effect. I can also recall two other cases, one acute, the other chronic, in which marked improvement was apparently due to emetine.

Note—My limited experience of emetine is almost entirely in its favour, and I can remember very few cases in which it has been given without effect. Its use also has been characterized by hardly any objectionable symptoms. Only once has there been any marked nausea and in no case did actual vomiting occur. In several cases some tenderness has been complained of at the site of inoculation, but nothing sufficient to cause serious opposition to the continuance of the treatment. The drug appears to be more efficient than even quite large doses of ipecacuanha taken internally, and it is noticeable that it has succeeded in several cases where the latter has apparently failed, though one bears in mind, of course, the possibility that the ipecacuanha may be just beginning to exert its influence when the injections of emetine replace it.

There are two practical points which present themselves for consideration in this connection, how far is a microscopic examination of the stools necessary, and does the drug act as well, or approximately as well, and without producing nausea, when given by the mouth? In many parts of India there is still a prejudice against hypodermic injections, and for this reason information on the latter point would be most useful. As regards a microscopic diagnosis of every case, speaking as an up-country Civil Surgeon who has many other duties outside his hospital wards and clinical laboratory, I have been interested to note that Lt-Col Rogers has somewhere referred to a possible diagnostic use of emetine injections, and I think it can be fairly argued that a routine treatment, commencing with a dose of castor oil and laudanum, and going on for at any rate the first few days with ipecacuanha, or preferably emetine, if expense is no object, combined with a milk or other suitable diet, is not likely to do the average run of cases any harm. If this fails, the saline or any other method may then be resorted to. In this way, where microscopic diagnosis is difficult, or unattainable, the treatment can still be carried out, and scientific accuracy at the commencement does not appear to be so urgently necessary as in some grave cases of malaria where the question of the presence or absence of the malaria parasite is at issue. Further, the differential diagnosis of the various amoebæ, when found, would appear to be a somewhat difficult matter, even for an expert pathologist.

NOTES ON THE EMPLOYMENT OF EMETINE IN THE DHARWAR DISTRICT

By C T HUDSON,

Lt Col, I.M.S.,

Civil Surgeon, Dharwar

So far as my experience goes, the type of dysentery met with in Dharwar is mild and is amenable to the time-honoured treatment by Ipecac.

Now and again, however, one meets cases that are refractory to, or intolerant of, ipecac. Since my return from furlough I have been treating some cases with ipecac and some with emetine hydrochloride and have no doubt that the emetine method is the simplest and most agreeable to the patient.

The diagnosis of the cases under report rested upon the clinical aspects of the cases, *i.e.*, abdominal pain accompanied by tenesmus and frequent passage of stools containing blood and slime. In only two instances, *viz.*, cases 3 and 4, were reliable examinations made of the stools for the amoeba histolytica.

Case I—Police constable, Hindu, aged 23, admitted 30th July. Fever for past three days.

No history of malaria, no enlargement of spleen or liver.

History of exposure to wet. Temperature on admission 100°F. Much abdominal pain, severe tenesmus, very frequent motions consisting shreds of mucus and blood. Tongue dry and furled.

Treatment—Preliminary dose of Ol Ricini with Tinct Opn. By a misunderstanding the patient was given the Ipecac treatment after having a $\frac{1}{2}$ gr dose of emetine hydrochloride.

The Ipecac treatment was continued until the 5th when the note of the case was as follows:

"Abdomen retracted, face pinched and anxious pulse quick and feeble, severe gripping pains, stools very frequent, consisting solely of reddish slime and blood." He was then put on $\frac{1}{2}$ gr doses of emetine twice daily, progress as follows—

8th—Character of stools changed, now becoming feculent.

9th—Pain has subsided, tongue cleaning, pulse improved.

10th—Improving, no action of bowels.

12th—Better, given 1 oz of Ol Ricini.

13th—Motions normal, tongue clean, appetite good.

23rd—Discharged cured.

Case II—Police constable, Hindu, aged 20, admitted 18th August. Dysenteric symptoms for past 4 days, no history of malaria, no enlargement of spleen or liver. Abdominal pain severe, motions very frequent consisting of slime and blood. Temperature normal.

Treatment—Preliminary dose of Ol Ricini with Tinct Opn, Inj Morph Hypodermic $\frac{1}{4}$ gr followed by Pulv Ipecac grs 30.

This treatment continued up to 22nd when the patient's condition got worse, the stools becoming so frequent that no count could be kept.

Emetine hydrochloride $\frac{1}{2}$ gr twice daily begun.

24th—Condition shows marked improvement all round, stools less frequent.

26th—Motions reduced to four during the day and are now feculent, patient feels well.

Emetine to be discontinued.

Motions continued loose for some time but free from any signs of blood or slime.

15th September—Discharged cured.

Case III—European, aged 47. Never had dysentery, but during 25 years' service in India has had malaria and liable to attacks of what he called "liver."

Was exposed to chill and over-exertion one afternoon in July. Suddenly seized with imperative call to stool and then noticed that the motion consisted merely of mucus tinged with blood. After a short interval he again passed a motion which this time contained a larger amount of blood.

There was no rise of temperature but pain in hepatic region was complained of. He was given an injection of $\frac{1}{2}$ gr emetine hydrochloride.

which relieved the tenesmus and frequency of motions

Next day as the stools still consisted of slime and there was still a trace of blood the dose of emetine was increased to $\frac{2}{3}$ gr. This caused a sensation of nausea but there was no actual vomiting.

After this dose the stools became feculent. On the third day $\frac{1}{2}$ gr emetine was given and the stools then became normal. The hepatic pain had disappeared. Examination of stools for amoeba histolytica negative.

Case IV—European lady. No history of dysentery but liable to "diarrhoea" during the rains.

Seen for acute dysentery on 16th October

No enlargement of spleen or liver. Temp 101. Diarrhoea and irregular pain in abdomen for last three days. Stools contained large amount of slime and blood. Given emetine hydrochloride $\frac{1}{2}$ gr

17th—No improvement. Emetine increased to $\frac{2}{3}$ gr

18th—Improvement, motions less frequent and less slime and blood. Emetine $\frac{2}{3}$ gr, slight nausea

19th—Motions feculent, little slime no blood no pain or tenesmus. Emetine $\frac{1}{2}$ gr

20th—Stools normal. Emetine discontinued

Case V—Police constable, Hindu, aged 30 admitted 17th October. History of malaria, no enlargement of spleen or liver, stools very frequent, consisting of blood and slime no feculent matter

Treatment—Preliminary dose of Ol. Ricini with Tinct Opn

18th—Emetine $\frac{1}{2}$ gr. twice daily

19th—Stools less frequent, but still contain blood and slime

20th—Stools still less frequent, no gripping, no blood, but some slime some feculent matter present.

21st—Only one motion in twenty-four hours slight amount of mucus and a little blood

22nd—Stools yellow and feculent, no blood or slime

23rd—Patient feels much better, no motions, emetine stopped.

27th—Discharged cured

Case VI—Police constable, Musulman, aged 26, admitted 2nd December for "fever and diarrhoea."

History of recent malaria but no enlargement of spleen or liver. No malarial parasites in blood. Temp. 101

Treatment—Diaphoretics and bismuth and soda

5th—Motions showed blood and slime, emetine $\frac{1}{2}$ gr twice daily

7th—No marked improvement. Emetine increased to $\frac{2}{3}$ gr twice daily

9th—Some nausea, emetine reduced to $\frac{1}{2}$ gr twice daily, blood and slime less, motions less frequent

11th—Improving, only five motions in twenty-four hours

12th—Motions feculent, no blood, a little slime emetine stopped.

16th—Discharged cured

The experience I have had with emetine is small, but it has been sufficiently satisfactory for me to continue using it. I am inclined to think that I have been commencing with too small an initial dose, and I intend in future to commence with $\frac{2}{3}$ gr or 1 gr. I have not found it so depressing as ipecac and have not seen it cause vomiting in the doses hitherto given.

A NOTE ON THREE CASES TREATED WITH EMETINE

BY E C G MADDOCK, M.D., F.R.C.S.E.,

Civil Surgeon, Ahmednagar.

S. L. M., male, Mahomedan, aged 22

History of dysentery of five months' duration contracted in Bombay and for which he was in a Bombay hospital for three months.

He was given emetine hydrochloride $\frac{1}{2}$ gr hypodermically morning and evening for three days and this resulted in a gain of 3 lbs in weight, the disappearance of blood and slime, the passage of a normal motion and a very great improvement in general health.

S. H. male, Mahomedan, aged 23

History of chronic dysentery of ten months' duration

The emetine treatment for three days completely stopped the blood and slime, but the gripping pain completely unaffected and a relapse the following day. Evidently, therefore a mixed infection.

A. V. male, Hindoo, aged 28

Admitted into hospital for acute pain over the liver and in the abdomen

On examination the liver was generally enlarged, excessively painful and the right rectus and abdominal muscles very rigid. A well marked friction rub hard over the 7th and 8th ribs.

The temperature irregular, on admission being 102°. The differential blood count as follows—

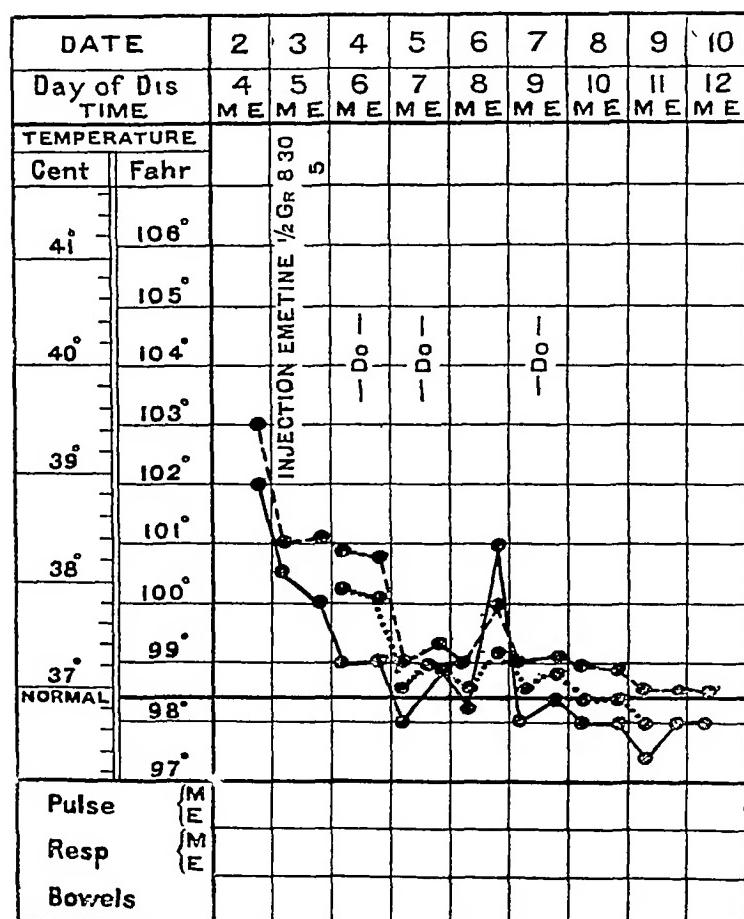
Polymorphonuclears	.. 85.7 %
Mono nuclears	.. 6.4 %
Lymphocytes	.. 7.9
Eosinophiles	Nil

Half gr doses emetine were injected morning and evening and the effect was marvellous as the pain at once diminished and the patient made a rapid recovery, as evidenced by the attached chart.

This is an undoubted case of abortion of a liver abscess by the use of emetine.

A NOTE ON THREE CASES TREATED WITH EMETINE

By E C G MADDOCK, M.D., F.R.C.S.E.,
Civil Surgeon, Ahmednagar



Indian Medical Gazette.

MARCH

OUR SPECIAL NUMBER.

A SPECIAL number like the present one needs but little introduction. It arose from the large number of papers contributed to the discussion at the Medical section of the Asiatic Society of Bengal which spread over several monthly meetings. The efficacy of Emetine in amoebic dysentery has been recognised all over the world, it is useless but harmless in the very common bacillary forms of dysentery. The value of Emetine in pre-suppurative hepatitis is now established, and it is a great advance when we find surgeons recognising its value in conjunction with aspiration in the treatment of liver abscess. The dangers of the open operation in worn-out patients who have applied for aid only after long suffering are well known and recognised.

We have been able to obtain several excellent papers from other parts of India to supplement the Asiatic Society's discussion, and, as will be seen they are in cordial agreement with Lt-Col Leonard Rogers in their appreciation of Emetine.

Current Topics.

SOME I M S GRAVES IN CALCUTTA.

In our December issue (p 479) we called attention to the fact that the Military Works Department had announced that certain graves of I M S Officers were being neglected in the Military Asylum at Bhowanipore, Calcutta, and that a sum of only Rs 30 (thirty) was needed to form an endowment for their up-keep.

Capt J. W Fleming (I M S, retd), now of Cliff Hall, Missouri, has sent us Rs 30 (thirty) for the endowment of the monument of Surgeon-Major John Elliot, M D., Surgeon-Superintendent of the Presidency General Hospital, Calcutta, and we hope that his kindly example will be followed at an early date. The sum of thirty rupees only, sent to the Asst Commanding Royal Engineer, Fort William, Calcutta will ensure the endowment and up-keep of a monument. Nine such monuments are mentioned in the letter quoted in our issue of December last, viz, those of—

- (1) Deputy Inspector-General W Keates, died 1869
- (2) Deputy Inspector-General R B. Kinsey, died 1865

(3) Superintending Surgeon Wm. Mongomerie, died 1855 (This monument will cost Rs. 70 to put in order.)

(4) Surgeon-Major Wm. Peskett, M.D., died 1870

(5) Surgeon-Major John Elliot (now provided for by Capt Fleming's donation).

(6) Surgeon-Major E. J. Gayer, M.D., died 1878 (We believe a near relative of Surgeon-Major Gayer is in one of the Services in India)

(7) Surgeon-Major Gopal Chandra Roy, M.D., died 1887

(8) Surgeon-Major C Prentice.

(9) G G Shilsbury, Physician-General, H.E.I.C.S., died 1857

It will be seen that a sum of rupees 280 (two hundred and eighty only) is still required to put these monuments in good repair.

May we count on subscriptions for this small amount? We shall gladly collect and acknowledge any subscriptions sent and forward them to the Asst Commanding Engineer, Fort William, Calcutta.

DEATH OF SIR J. J. TREVOR LAWRENCE, I M S (retd)

SIR JOHN JAMES TREVOR LAWRENCE, second Baronet, died at Buiford House, Doirking, on 22nd December 1913, a few days before completing his eighty-second year. He was born on 30th December 1831, the son of Sir William Lawrence, Sergeant-Surgeon to the Queen, and of Louisa Senior, of Broughton House, Buckinghamshire. He was educated at Winchester, and at his father's hospital, St Bartholomew's, took the M R C S in 1853, and entered the Bengal Medical Service on 20th January 1854. He became Surgeon on 1st January 1866, and resigned a few weeks later, on 24th February 1866. While in the army he saw no war service, though he was in India during the Mutiny. He was then Medical Officer of the 4th Bengal Infantry, which was stationed at Nurpur and Kangra, and was disarmed at these stations. The regiment was disbanded in 1861.

His service in the I M S, however, was merely an episode in his early life. His real career began after he left India. When his father died, on 5th July 1867, he succeeded to the Baronetcy, which had been conferred only a few weeks earlier, on 30th April 1867. In 1874 he contested Gloucester, as a Conservative, but without success. In 1875 he was elected in the same interest as one of the two members for Mid-Surrey, and sat for that constituency for ten years, until it was abolished in the redistribution of seats in 1885, when he was elected M P. for the Reigate Division of Surrey, holding the seat for seven years. At the general election of 1892 he did not seek re-election. The seat has been held by a Conservative ever since, except from 1906 to 1910.

In 1892 he succeeded Sir Sydney Waterlow as Treasurer of St Bartholomew's Hospital, and held that office till 1904. During these twelve years he gave £100 annually for a research studentship at the hospital. He also assisted in founding the Lawrence scholarship in memory of his father. He was a member of the Council of King Edward's Hospital Fund from its inauguration until a few weeks before his death. On 9th November 1902 he was created K. C. V. O. He was also a Knight of Grace of the Order of St. John of Jerusalem.

His chief interest, however, was horticulture, his speciality being orchid growing. From 1885 to 1913 he was President of the Horticultural Society, which presented him with the Victoria Medal in 1900, with his portrait, painted by Sir Herbert Heikomei, in 1906, with the Veitch memorial gold medal in 1913, and founded the Lawrence medal in his honour. He had also very fine collections of Japanese lacquer, and of Chinese and European porcelain.

In 1869 he married Elizabeth, only child of the late John Bulford of Doiking, by whom he had three sons and one daughter. His successor, as third Baronet, is his eldest son, William Mathew Trevor, born 17th September 1870.

CANAL ZONE MEDICAL ASSOCIATION

THE Proceedings of this Association in the Panama Canal Zone for the half-year ending September 1912 are only now to hand (January 1914). There is a lot of good material in the present volume from which we can only make a few extracts. Dr. C. M. Winn writes on the use of Salvarsan in amoebic dysentery. He concludes in a cautious way that Salvarsan when intravenously administered is toxic to intestinal amoebae and thinks he has shown that it has "a certain curative value." Dr. A. J. Oreinstein writes of screening as an anti-malarial measure and concludes that a properly screened dwelling can reduce by one-third the malaria incidence. A screening with 18-mesh copper gauze is recommended. Dr. L. B. Bates discussed the ants as possible transmitting agents in enteric and bacillary dysentery. Dr. W. M. James reports a case of infection with entamoeba tetragena and Dr. W. E. Deeks writes of his "six-day fever," and in the discussion he complains of a want of clinical data as to the "seven-day fever" of India with which some speakers allied it. We see no suggestion of any relation of this fever to Dengue. Dr. D. F. Reedel discussed the best method of dealing with the capsule after cataract operations, stating that "the Smith operation is not considered advisable by a great majority of conservative operators."

Dr. Lloyd Noland and Dr. F. C. Watson report three cases of "spontaneous rupture of the malarial spleen," in which there was not the slightest history of trauma even of the mildest degree; and

Dr. Clark referred to another possible case in his own experience.

Dr. James' well-known paper on relapses in malarial infections is given in full and is well worth reading, but is too long to adequately quote here.

USE OF EMETINE IN HÆMOPTYSIS.

IN connection with the papers published in this special number we may quote the following note on the use of this drug in haemoptysis —

"The remarkable effect of the use of emetine in amoebic dysentery has been the prompt disappearance of blood from the stools. In hepatic abscess a similar disappearance of blood from the pus has also been noticed. These facts induced a French observer, C. Flandin, to try the effect of the drug in haemoptysis. He injected subcutaneously into the thigh 0.04 gm. ($\frac{1}{3}$ grain) of emetine hydrochloride dissolved in one c.c. (16 minims) of distilled water. The result was surprising, the haemorrhage from the lung stopping immediately. No unpleasant sensations were produced by the emetine neither palpitation, dizziness, nor nausea. While some cases showed an immediate and complete disappearance of blood from the sputum, in most cases there were occasional blackish clots for a time. Flandin usually repeats the injection after twelve hours, as haemoptysis occasionally returns, and he advises a repetition of the injection on four or five succeeding days. In all his cases, except one of advanced tuberculosis, he succeeded in definitely arresting the haemorrhage, while there was no appreciable change in the blood pressure or in the coagulation or blood count. The results are certainly worthy of notice, especially as the method appears to be perfectly harmless."

THE ADMINISTRATIVE CONTROL OF SMALL-POX

DR W. McC. WANKLYN, of the Metropolitan Asylums Board, London, has published a most useful and practical book under the above title."

The book is a companion volume to another by the same author called "How to Diagnose Small-pox." (Smith Elder & Co.) It was drafted primarily for post-graduate students, but it will be found of the greatest value to all who have to deal with smallpox outbreaks.

It is notorious how suddenly outbreaks of smallpox appear. Communities like the inhabitants of our Indian cities are collected in close town populations, largely unprotected by vaccination and exposed always to a dropping fire of infection from all sides, are quite certain sooner or later to suffer from a serious invasion of small-pox. The best Public Health Departments cannot stave it off indefinitely, they can avert it at times and when it does come they can do much to cut it short. Cases must constantly appear, many are caught by notification and regular medical inspection, but cases may be imported in a latent form during the period of incubation, or infection may be brought in clothes, rags or other raw material.

In some countries the number of the population which is susceptible is very great, in some communities their numbers are increasing. Small-pox

comes in cycles, of indefinite period. In England the intervals are about nine years, in Calcutta they are seldom longer than three or four years.

Small-pox is notoriously a highly infective disease, but the striking power of different cases or of groups of cases varies in a remarkable manner.

On the occurrence of a case the first thing to do is to ascertain exactly the extent of the existing mischief and how it originated. The first cases are of vital importance and no delay must be allowed in at once attending to them and instituting precautions. The next thing is to verify the diagnosis, be on the look-out for cases of chicken-pox, which in the tropics attacks adults to an extent scarcely realised by those who only know the disease among children in Europe. Cases of "influenza with spots," "suppressed measles," mysterious "blood poisonings" are to be inquired into. The elusive habits of small-pox cannot be exaggerated.

The date of the appearance of rash proper is a vital point of inquiry, on this the safety of all in contact may depend. Concealment is always to be expected.

The question of "contacts" is of the first importance. "Contacts" may be other people residing in the house, visitors to the patient, or those who met the patient outside his own house.

Arrangements should always be ready for vaccination and revaccination on a large scale.

"Anyone who is recently and successfully vaccinated cannot by any possibility contract small-pox," but the protection afforded by vaccination wears out after a lapse of time which is uncertain and varies with each individual. We entirely agree with Dr Wanklyn when he states that a word is badly needed to signify "efficient and recent protection by vaccination." The term "vaccinated" is necessarily a word of vague meaning. We want such an expression as "salted" or "immunised" to signify recent and full protection. Vaccination if performed successfully within the first three days of the incubation period can and does protect the patient. Vaccination on the 4th day is too late.

As regards the protection of attendants, etc., on the sick, the rule should be to vaccinate again every applicant for small-pox duty "unless he or she can show a pigmented foreated scar indicating recent and successful vaccination."

Dr. Wanklyn's book is an eminently practical one and should be in the hands of every health officer.

In India the danger is the same, though the problem is more difficult, but the advice as to preparation and methods is equally applicable to India and to the more advanced countries in Europe.

MANAGEMENT OF A CHOLERA OUTBREAK

DR H Martyn Newton of Jalalpur writes of his experiences of a cholera outbreak in *Medical*

Missions in India (October, p 143), and from this useful and practical article we quote as follows —

The first case came from outside, and through carelessness (of a type of which all are well aware) water and food became contaminated.

The following then was our programme —

(a) Disinfection of wells with Pot Peimang — especially those supplying aerated water factories (This is not so easy as it sounds, and a little gentle persuasion is sometimes necessary, especially if the well be in a mosque.)

(b) Stopping the washing of clothes at wells and tanks. This meant a police guard. I found contaminated clothing being washed in the bathing tanks, and not till I got the King's uniform on guard would the people stop it!

(c) Flies. These in my humble opinion are the greatest sinners of all. To see flies feeding on cholera excreta just outside the house, and then —?

Daily washing of drains with Phenyle. Giving out lime to be thrown over all excreta. Care with regard to the disposal of rubbish.

Disinfection of soiled clothes. Encouraging the use of disinfectants for hands, etc., in infected houses.

(d) Town crier sent round warning people about food, drink, etc., especially as to raw vegetables.

(e) Vegetables, drink shops and restaurants inspected, and steps taken to prevent the contamination of food and drink.

(f) People encouraged to report cases. All (or most of) reported cases visited by the civil Sub-Assistant Surgeon who is responsible for the giving of drugs and disinfectants.

(I only went to those cases that called me, since I have learned from Plague experience that the majority of people do not care to "risk" our treatment.)

Treatment — The Government Staff have been supplying the usual things, viz., Pot Peimang (gr. v to the pint) to be drunk ad lib., plus Camphorodine, etc. This, together with their sanitary work, has been under my direction.

As to our treatment — When we came to this question we were up against a serious difficulty, in that in most cases anything put into the stomach very soon comes up again. We of course tried the usual internal remedies, including as much Pot Peimang as the patient is able to keep down (this given in half to one ounce doses will often stay down when everything else is vomited).

This being the case, I have pinned my faith to *Saline* injections, to which I add, as I think the case may require, Adrenalin, Biaud, or Morphia, — or even all three. The tray brought by the boys has everything on that may be required. Morphia is particularly useful, as it quiets and gives necessary sleep to the patient, and also acts on the intestines.

As to the Saline —

(a) *Strength* — I have tried both Normal and Hyper tonic solutions, and now always use the latter (NaCl 2 di to pint).

(b) *Method* — Intravenous has its advantages in certain cases, e.g., very profound collapse where a quick action is wanted. It is however messy and difficult.

On more than one occasion I have not been able to get the cannula into the lumen of the vein.

It is a good plan to leave the cannula *in situ*, thus it is always ready should further injections be necessary. Intracellular is easy and, so far as I can see, quite as good as the other method, even in bad cases.

With patience, and a little massage, 60 ozs can be given on each side.

I think the best place is in the anterior axillary line, a little above the nipple, with the needle pointing towards the axilla.

(c) *Quantity*. — I have never given less than 30 ozs nor more than 90 ozs at one sitting, and three sittings the maximum in any one case.

(d) *Time to give it* — Some people say "wait till the stage of collapse."

With this I do not at all agree, and strongly recommend going ahead as soon as the diagnosis is certain

I believe the main object in treatment to be the preventing of the depletion of the blood of its fluid elements, and that the only way to do that is to pour in a hypertonic solution. Secondary to this is the washing out of the stomach and intestines with as much Pot. Feimang solution as the patient can get down. I kept on with the latter for from two to three days

Note — I strongly recommend the use of a little Chloroform in the case of children

DANGER-SIGNALS AND COLOR BLINDNESS

The following extract from an editorial article in Journal A M A (November 8th, 1913), is of interest and importance —

RED NOT A SATISFACTORY DANGER-SIGNAL

Red has been the sign of danger and a warning signal since the earliest times. Just why it was selected as a danger warning is a question for the anthropologist and historian to determine. It is unfortunate that this color, which is becoming increasingly important with the growing danger of accidents in civilized life, is the color to which many human eyes are insensitive. Color blindness is apparently becoming more common. In its most frequent form, it is impossible for the color blind person to distinguish red from green, yet those two colors, which are the most confusing to the human retina, are the very ones which are in most common use as signals for danger and caution. So common is red and green color blindness that all licensed pilots, masters of vessels, engineers, firemen, motormen and others employed in directing vessels, trains, trolley cars and other means of transportation, are required to submit to a color test and to prove that they possess an accurate degree of red green color perception. The simple expedient of selecting as a sign of danger a color to which practically all human eyes are susceptible has only recently been suggested. *Drugs, Oils and Paints*, in a recent issue, contains an article by Dr Francis D Patterson, suggesting a new signal to take the place of the familiar red warning. Patterson calls attention to the fact that the number of industrial accidents is at present enormous and is apparently increasing. As approximately one male in every twenty five has a deficient color perception and as most of these have an impaired sensibility for red, Dr Patterson argues that the retention of this color as a danger signal is simply inviting further increase in accidents. His objection is based on the fact that many persons are color blind to red and are consequently not only barred from any occupation in which a color perception is necessary, but are also deprived of the protection from accidents and danger supposed to be offered by danger signals. He also objects to red for practical reasons, it is a fugitive color, difficult to distinguish, fading on exposure to sunlight and requiring frequent repainting. The possibility that red and green color blindness will increase rather than diminish in the future only serves to emphasize the unfitness of these colors as signs of danger and caution. Experiments with the spectrum and with color-blind persons, as well as with various colors at different distances, leads Patterson to the conclusion that yellow and blue are the best colors for danger signals, as he says that they are the only colors which give rise to a normal color sensation as soon as they become visible, are the most luminous colors of the spectrum, and are permanent and fast, while color blind persons react normally to them.

siderable number of papers and articles ready for publication

Messrs THACKER, SPINK & Co have in preparation a Medical Directory for India, Burma and Ceylon. The first edition of this Directory was published in 1913 (price Rs 3-8). In addition to alphabetic lists of all qualified medical practitioners in Assam, Bengal, Bihar and Orissa, Bombay Presidency, Burma, Central Provinces and Hyderabad, Ceylon, Madras, N-W Frontier, Baluchistan and Kashmir, Punjab, Rajputana and C I Agency, and the United Provinces, a list of nurses and midwives is also appended. The introduction gives a list of information about entry to the I M S and R A M C, degrees at British University, and on Medical education in British India.

The little book is a most useful one

Medical Society.

ASIATIC SOCIETY OF BENGAL DISCUSSION ON THE EMETINE TREATMENT OF AMOEBOIC DYSENTERY AND HEPATITIS

In Adrian Caddy said that the emetine treatment of dysentery had come to stay. In some acute cases he found it was advisable also to give ipecacuanha by the mouth, as it contained some other alkaloids besides emetine which might be of service. He and his partner had used the sigmoidoscope for diagnostic purposes in dysenteries, but with disappointing results, as it was difficult to recognise the nature of the ulcers, even when they were present in the lower bowel. He was doubtful regarding the advantages of aspiration over the open operation in all cases, and thought the latter method was safer in the case of abscesses pointing in the epigastrium.

Lieut-Colonel A R S Anderson had found liver abscess extremely rare among the convicts in the Andaman Islands, and in one case it was due to an ulcer in the duodenum. With regard to the varieties of amoebae, he had found typical *E. coli* in the stools and *E. histolytica* in a liver abscess a few days later. In one case of dysentery the amoebae had disappeared in four days, but the patient died thirteen days later. At Port Blair in 50 per cent of cases shewing amoebae in the stools they disappeared after two months or so. In one case a liver abscess was opened in front, but later two other swellings appeared, but on the patient being sent home they disappeared spontaneously, and he was well twenty years after, the abscess having apparently encysted.

Lieut-Colonel G G Giffard spoke of his experience with emetine in Madras. His first case was a very severe one in an European female aged 35, with a temperature of 105°F and 40 motions a day with very numerous amoebae

Owing to the special nature of this issue, the Editor regrets that he has had to hold over a con-

Hypodermic injections of $\frac{1}{2}$ grain of emetine twice daily cured the patient completely within 48 hours, having acted like black magic, the treatment being very good in acute cases in adults. On the other hand, in young babies with stools swarming with amoebae it might fail, and in chronic cases in adults rapid improvement might be followed by relapses after several weeks. He would like to ask if there was any method of recognising the fatal multiple liver abscess cases during life?

Lieut-Colonel Sutherland had suffered severely some years ago from dysentery and had consumed an ounce of ipecacuanha sine emetine without the slightest benefit. On taking ipecacuanha he was soon cured. He had early tried emetine and reported his results to the author of the method, and he agreed that the remedy acts like magic. In children it acted very rapidly in half-grain doses and was quickly followed by constipation. He knew of no drug like it.

Colonel Baratwala had also used emetine in severe cases of dysentery with good success.

Lieut-Colonel C M R Green thought that the open operation for liver abscess should not be condemned as completely obsolete, as it might be necessary in certain cases in which the abscess was on the point of bursting. The unfavourable results might partly be due to its being used in patients *in extremis*. He had found emetine to act very well in dysentery in children.

Lieut-Colonel E A R Newman spoke of the danger of fatal internal haemorrhage after aspiration for doubtful liver abscess, and also to the uncertainty of the procedure, as even after repeated punctures an abscess might be missed. Again, it was dangerous to aspirate for liver abscess through the epigastrium as the abscess might be in the gall-bladder or on the surface of the liver without any adhesions over it. He therefore preferred to open the abdomen in these cases, and to incise epigastric abscesses. He did not think the secondary infection of opened liver abscesses was of much importance. He was doubtful as to the value of aspiration and injection of quinine, but kept an open mind regarding the latest method of aspiration combined with hypodermic injections of emetine. He preferred local anaesthesia when possible.

Major Thurston in reply, said that he emphasized the fact that his paper was based on his own notes of all the cases, as the Medical College Hospital notes were very incomplete, and of little use for analysis. Even in liver abscesses pointing in the epigastrium it was often quite safe to aspirate through the liver tissue a little to one side of the pointing portion, and it was only quite exceptional that it was necessary to do the open operation.

Lieut-Colonel Leonard Rogers, in replying to the whole debate, said that as the hour was late he would only deal with the main points which had been raised in the discussion. We were fortunate in having several distinguished visitors from

other provinces and in hearing their views. With regard to the emetine treatment of amoebic dysentery, there was not much to be said as all were agreed regarding its remarkable specific action. Colonel Anderson had referred to a case dying some days after the dysenteric symptoms had disappeared. He had shown the drawing of the large gut from a similar case, in which all but the peritoneal coat had been destroyed in several places and perforation had occurred in the caecum. When the bowel wall was so extensively destroyed recovery could not take place, ordinarily children did particularly well on emetine, probably because they received relatively large doses in proportion to their body weight. In reply to Colonel Giffard's question as to the possibility of the recognition of multiple liver abscess cases, he had found that if acute hepatitis ensued within a week or two of acute amoebic dysentery, and especially if the dysenteric symptoms also continued, multiple abscesses were usually found. In these cases, as a rule, a very high leucocyte count would be found, such as from 30,000 to 50,000, and the prognosis was very bad. The case which Colonel Nott only just failed to save by emetine was of this nature, and the only chance lay in the early use of this drug.

Passing on to the important question of the treatment of amoebic abscess of the liver, it was very gratifying to him to find a surgeon of such experience as Major Thurston so emphatically endorsing his method of aspiration and the injection of drugs to destroy the amoebae, as opposed to the open operation with inevitable post-operative sepsis. It was as early as 1902 that, as a result of his investigation proving the amoebae to be the sole constant organism found in this class of liver abscess, and one which was readily killed by quinine solutions, and the common absence of bacteria—that he suggested the aspiration and injection of quinine. He was told it was not a surgical procedure and it was some time before he could get it tried. He has published records showing a reduction of the death-rate by this method to about one-fourth of the old rate, when the class of cases dealt with was taken into consideration. In the discussion which had taken place on the vexed question of the new method *versus* the open operation, he thought that the principles underlying his method had been somewhat overlooked. Amoebic abscesses differed essentially from other forms of suppuration, in that the causative organisms could be killed within the body tissues by ipecacuanha and the active principle emetine. This was the fundamental fact to bear in mind, for without these drugs it would be a very doubtful question whether the open operation was not the best method. Major Thurston's carefully analysed data showed that the injection of quinine into the cavities did not give appreciably better results than in cases in which aspiration alone was used. On the other hand, he had

clearly shown that the use of ipecacuanha, and still more of emetine, in addition to aspiration, gave appreciably better results. The speaker was now of the opinion that the improved results recently obtained by aspiration were mainly due to its combination with the administration of these drugs, and he was inclined to agree with those who thought that it was not necessary to inject anything into the abscess cavity, provided emetine was regularly given hypodermically to destroy the causative organisms in the wall of the liver abscess. In this connection he thought Major Thurston's method of injecting a grain emetine hydrochloride hypodermically immediately after the operation was a promising advance, as it would lead to flushing of the amoeba containing tissues with the effusion of serum into the emptied cavity. Although he maintained that the correct principle to guide the treatment of amoebic liver abscess was to aspirate and inject emetine hypodermically, yet he fully recognised that it must be left to the surgeon to say when this plan is safe, and to fall back on the open operation in exceptional cases in which they did not think it safe to aspirate. He would point out, however, that the pointing of such an abscess was not a sufficient reason for always opening it, as he knew of several cases, including some of Dr K K Chatteji's, in which aspiration had been performed with complete success through the liver tissue to one side of the pointing site. To conclude, he thought that his method was now fully established as the method of election, to which he believed the exceptions would become steadily fewer with increasing experience.

Correspondence

EMETINE AND DYSENTERY

To the Editor of "THE INDIAN MEDICAL GAZETTE"

SIR.—WITH reference to Emetine and dysentery, I have had very little experience of this drug as I only arrived out from Home last March, was laid up for some time after this and during the two months or so I have practised have had comparatively few cases to treat, as this is not the time of year for such cases in Nisik.

If however my experience of this drug with the few cases I have had is of any use to the Gazette, I am willing that you should make use of it.

I have treated perhaps 10 cases with Emetine, nearly all of them being sub acute or chronic. I have noticed very little if any improvement under this treatment and after varying periods of three to five days have given $\frac{XX}{X}$ of powdered Ipecacuanha with marked and almost immediate improvement. I am a firm believer in Ipecacuanha as a specific for Dysentery of a certain type, and of the type that has of late come my way and have found no advantage in emetine if the former drug is properly administered. I however quite admit that my experience is very limited and intend giving the drug a further trial.

With regard to the treatment of allied liver conditions, I have had no first hand experience of Emetine.

Yours, etc.,
A J V BETTS, M.B.,
CAPT, I M S

A SIMPLE METHOD FOR THE REMOVAL OF WOUNDED FROM THE FIRING LINE IN MOUNTAIN WARFARE

To the Editor of "THE INDIAN MEDICAL GAZETTE"

SIR.—CAPT R Kennedy's interesting article on Ambulance Transport in very difficult mountainous country has suggested to me to make known through your columns a method for removing casualties in hilly country from the firing line. This was shewn to me by Capt D J Shuttleworth, who told me it has been in use in his regiment, the 3rd Gurkhas, for some years. The photograph I send illustrates the method.

A sepoys' puttie is taken and the two ends firmly knotted together thus forming a loop. This is placed beneath the buttocks and over the shoulders of the wounded man who is propped up in the sitting position. The bearer squats in front of him and hooks his arms through the puttie beneath the nippits of the wounded man. The latter lies on the bearer's back who rises to the erect position, assistance if necessary being given by a comrade. The position of the top part of the puttie can be varied according to the helplessness of the patient. If quite helpless (or a corpse) it should be placed high up across his scapulae. In penetrating wounds of the chest it should be placed lower to prevent compression of the chest wall, and in slighter degrees of injury it may also be placed lower when the wounded man may be able to give some assistance to the bearer.



This method is of course only intended to carry wounded men short distances over difficult ground where a stretcher would be cumbersome or useless, and where rapidity in relieving the firing line of casualties is of the first importance, as is the case in Indian frontier warfare.

In my opinion this is superior to any other improvised methods of carrying a wounded man that I know of, for the following reasons—

1 It is very simple. It can be taught to men of the dullest intellect, and once learned is not liable to be forgotten, which is more than can be said of many other methods.

2 The bearer has the use of all his four limbs and his head, to negotiate the ground. This is a very important consideration if a wounded man has to be taken down a hillside.

3 A wounded man can be taken out of action by one comrade, though it is advisable and more expeditious to have a second man to give assistance and carry the three rifles.

4 Any injury, I believe could be dealt with by this method, even a fractured femur, as the illustration will show.

My reasons for bringing this to your notice are firstly, that it is different from the "Gurkha Method" described by Capt Kennedy, and secondly, that it does not seem to be generally known.

G. N. FLEMING, MAJOR, I M S, M.B., C.M., F.R.C.S., Ed.

DELAYED CHLOROFORM POISONING.

To The Editor of "THE INDIAN MEDICAL GAZETTE"

SIR,—As no comment has been made on the interesting paper on "Delayed Chloroform Poisoning" by Major Munro and Capt Denham White which appeared in the October issue of the *Indian Medical Gazette*, I shall be grateful if you will grant me space for a few remarks on this very important subject.

Mr Frew (1) has shown that of 662 children admitted for all causes to the hospital for sick children, Great Ormond Street, 61.6% developed Acetonuria. The Acetonuria appeared within 12 hours of admission, reached its maximum at the end of 36 hours, and then gradually diminished, all trace usually being gone by the 4th day. The younger the child the greater is the incidence of Acetonuria. The Acetonuria rapidly disappears on giving dextrose. Its occurrence is attributed to the change from the accustomed home diet to the hospital diet causing a temporary derangement of the digestive functions, especially the digestion of carbohydrates. This results in (1) Carbohydrate starvation, (2) excessive fat metabolism, (3) a corresponding excess of the products of fat metabolism among which are the acetone bodies.

In our Indian hospitals this condition would probably affect European children more than Natives of India.

Busby (2) found that an acute acid intoxication is developed during the onset of acute infective conditions, e.g., Appendicitis. The administration of ether and chloroform invariably produce an acute Acetonuria. Ether however produces little toxic action on the cells of the liver and kidney. Chloroform on the other hand has a distinctly injurious effect on the cells of the liver and kidney. The precise modes of action need not be discussed here.

Given a patient who is suffering from an acute acid intoxication as the result of an acute infective process, change of diet, or the traditional pre-operative regime, the administration of an anaesthetic will produce in him a still greater degree of acidosis. If the anaesthetic be ether, the liver and kidneys will be able to deal with the intoxication, but if chloroform be the anaesthetic the liver and kidneys may be so damaged that they are unable to cope with the demands made upon them. Excretion of the acetone bodies in the urine diminishes or ceases entirely, they accumulate in the blood and the patient is overwhelmed by the poison.

Symptoms of toxæmia only occur on failure of excretion. Busby states that of 19 cases of acute appendicitis operated on under chloroform at the Edinburgh Sick Children's Hospital, 14 died. All of these exhibited symptoms of acidæmia and 11 were proved post mortem to have suffered from this condition. As the result of this experience ether was substituted for chloroform and out of the next 24 cases operated on for acute appendicitis only 2 died, and not of acidosis. I would suggest that in the above mentioned facts lies the explanation of the fatal termination of case II (Acute Appendicitis) described by Major Munro and Capt White. In the light of this experience I think that acute infective conditions, especially those involving the abdomen, should be regarded as an absolute contraindication to chloroform anaesthesia where ether is available. Fatal post-operative toxæmia is by no means a very rare condition and I have seen a number of these tragedies in adults as well as in children.

In spite of these, now well established contra indications to the use of chloroform, it is still the only anaesthetic employed in the great majority of Indian hospitals, and in hospitals for Indian troops it is the only one available.

This depends largely on the question of expense. But if the judicious substitution of ether for chloroform in suitable cases will lessen the operation mortality, surely the increased expenditure should be faced. In the cold weather ether can be administered by the open method and in the hot weather, in a climate like that of Secunderabad at least, it can be conveniently and economically administered by means of Jinkins' apparatus. I think that it would be useful if some of your readers with a wide experience of surgery in India would express their views on the important question of the practicability or otherwise of a more extended use of ether in surgical practice in India, with a view to reducing the immediate risk of shock as well as the more remote danger of post-operative toxæmia.

As regards the treatment of the toxæmia, Waugh (3) has reported the recovery of two apparently moribund cases under massive doses of dextrose.

EDINBURGH
15th December, 1913

Yours faithfully,
A G COULLIE,
CAPT I M S

(1) Frew. "The significance of Acetonuria in Children," Proc. Roy. Soc. Med. 1912.
(2) Busby. B.M.J. May 19th, 1906.
(3) Waugh, Proc. Roy. Soc. Med., 1912.

PSYCHO ANALYSIS

To The Editor of "THE INDIAN MEDICAL GAZETTE"

SIR,—May I be permitted to lodge a protest against the remarks of your reviewer in his review of White and Jelliffe's "Modern Treatment of Nervous and Mental Diseases" in the January issue of the *Indian Medical Gazette*, in the matter of Psycho analysis and Psychotherapy in general?

In paragraph 2 of p 30 your reviewer remarks "one cannot but help feeling that is a routine method of treatment if (Psycho analysis) is undesirable." As far as I am aware, nowhere in the text book under review, or anywhere else either, is Psycho analysis recommended as a "routine method of treatment." Certainly no one who has had sufficient experience of the psycho analytic method of treatment would ever make such a recommendation. The drawbacks to this method are fully discussed by Dr Ernest Jones in his contribution to the book entitled "The Treatment of the Psychoneuroses" on p 399 of Vol 1, both from the point of view of the physician and of the patient. As regards the effect of psycho analytic treatment on the patient, your reviewer records the astonishing observation that, "it (Psycho analysis) is too near akin to hypnotism," and, "seems in all probability calculated to bring a large percentage of such cases under sub hypnotic conditions." Not content with the expression of this extravagant and quite erroneous opinion, your reviewer concludes that, "to count it therefore as a method of treatment seems wholly wrong." What exactly your reviewer means by "sub hypnotic conditions" it is difficult to surmise, but in any case the speculation is totally irrelevant, for, so far from producing anything in the nature of an undue dependence on the part of the patient towards his physician, the psycho analytic method of treatment on the contrary summons the patient to participate actively in the process of investigation, and this process, if properly conducted, leads through a thorough education of the patient's whole mind to a degree of self knowledge, self guidance and self control that were previously impossible for him.

Did your reviewer possess even a superficial knowledge of the psycho analytic method of treatment it were impossible that he could misunderstand it to such an extent as he appears to do. As one who has had some considerable experience theoretically as well as practically, of this very radical and efficacious method of treatment, I would request those who may have been misled by reading your reviewer's remarks on the subject to peruse carefully Dr Jones' contribution cited above and, if their interest in the matter goes far enough, to follow up with a study of Jung's "Diagnostische Assoziations Studien" and Freud's great work on the interpretation of Dreams, to which, by the way, your reviewer has failed to make any mention when referring to Freud's work, although the study of dreams of patients furnishes one of the principal sources of material for the psycho analytic method of treatment.

CENTRAL ASYLUM, {
YERAVDA

I am Sir, etc
OWEN BERKLEY HILL,
CAPTAIN, I M S

[A recent correspondence in B.M.J. (e.g. January 17) shows that medical opinion is very sharply divided on the merits of "FREUDISM" — Ed., I M G.]

THE POISON OF THE KRAIT

SIR,—May I draw your attention to the letter from Captain R. Crawford Boyd on a case of Snake Bite in the December number. The letter first came to my notice in the *Times of India*, and as it has been made thus public I think any doubts should be cleared up. I believe that all authorities are agreed that the poison of the common Krait is, bulk for bulk, more virulent than any other Indian snake. The case is therefore all the more remarkable. I think Captain Boyd should be asked on what points he identified the snake as a Krait and whether he preserved the snake for identification by experts.

Yours, etc,
A. J. V. BETTS

[For the virulence of snake poisons, see two articles by Captains Acton and Knowles, I M S, in *Indian Journal of Medical Research*, January, 1914 — Ed., I M G.]

THERAPEUTIC NOTICES

EMETINE IN AMOEBOIC DYSENTERY

DR LEONARD ROGERS, I M S, Professor of Pathology in Calcutta, was the first to draw attention to the value of emetine in the treatment of amoebic dysentery, and the strikingly good results obtained by his method have aroused general interest. The value of emetine in amoebic dysentery,

particularly the extraordinary rapidity with which very marked improvement follows the subcutaneous injection, has been amply confirmed by other observers, who have tested the drug with most satisfactory results.

The nausea and vomiting produced by the large doses of ipecacuanha which are essential to obtaining its full emetic effects frequently render its administration by the mouth impracticable. Vedder's observation that emetine, the principal alkaloid of ipecacuanha, has the power of destroying amoebæ, was fully confirmed by Rogers who, therefore, decided to try its hypodermic use in the treatment of amoebic disease.

The cases reported by Rogers (*Brit Med Journ.*, June 22, and Aug. 24, 1912), include acute and chronic amoebic dysentery, acute hepatitis and amoebic abscesses. Rogers usually injects the emetine, dissolved in sterile water or normal saline solution, in doses of half a grain and often gives as much as two thirds, the equivalent of 60 grains of ipecacuanha.

J. W. Lawson reports (*Brit Med Journ.*, Sept. 25, 1912), a case of chronic dysentery of ten years' duration which was successfully treated by hypodermic injections of emetine hydrochloride. A solution of 1 grain in 30 min. of water was used, and starting with 1/6 grain dose, this was increased to 1/3 grain, then 1/2 grain in all nine injections of the solution were given, totalling 2 2/3 grains of emetine hydrochloride. Immediate improvement resulted and some days before the termination of the treatment the bowels acted normally once a day, the stools being of a natural consistency.

J. Preston Maxwell (*China Medical Journal* March, 1913), was also able to confirm the action of emetine, and states that the physician has now a drug which acts more surely on amoebic dysentery than any drug hitherto in hands and that with a minimum of discomfort to the patient.

R. Lyons (*Journal of the American Medical Association*, April 19, 1913), summarizes the advantages of emetine treatment as follows: (1) simplicity and ease of administration of the drug, (2) no vomiting or depression, (3) accurate dosage (no loss through bowels), (4) rapid absorption and effect, (5) reliability of product (hydrochloride). He believes that his results are highly suggestive that in the subcutaneous injections of soluble emetine salts an ideal method has been found of treating amoebic diseases.

To ensure a uniform and reliable therapeutic action it is imperative to employ a pure salt. MEICK'S EMETINE HYDROCHLORIDE is free from impurities and has the composition:

$C_2H_{11}N_2O_4 \cdot 2HCl \cdot 2H_2O$ it contains 92 per cent of anhydrous salt. Meick's Emetine Hydrochloride is issued in bottles of 5, 10, 15 & 20 grains.

For Hypodermic Injection it is issued in sterilized normal saline solution—
in boxes of 10 ampoules, containing 0.03 grammes (1 grain) in 1 c.c.
in boxes of 10 ampoules, containing 0.05 grammes (1 grain) in 1 c.c.

Emetine Hydrochloride, hypodermic tablets containing 0.03 grammes (1 grain) and Sodium Chloride 0.02 grammes (1 grain)
Emetine Hydrochloride, hypodermic tablets containing 0.05 grammes (1 grain) and Sodium Chloride 0.03 grammes (1 grain)

THIRD ALL INDIA SANITARY CONGRESS

Lucnow, Jan 19th to 27th

MESSRS BURROUGHS WELLCOME & CO, London & Bombay, had a very interesting exhibition at the above, which was held in the King George's Medical College. The exhibit was visited by nearly all the Delegates and greatly appreciated.

Among other things shown we might mention the following—"Tabloid," Cholera Equipment specially designed for the Government of India, for treatment by Hypertonic Salines and Orial administration of Permanganates, with Glycerine dilutions for estimation of Specific Gravity of the blood.

"Tabloid" Tuberculin Dilution case, enables the doctor to prepare his own dilutions, and have them ready to hand in a compact case.

Soloid Water Analysis, Sewage & Water Analysis, Blood Test Bacteriological and Quinine Injection cases were of especial interest.

A very fine show was made of Tabloid Cuttage & Medical Equipment cases, including a Congo Case in Aluminium and fitted with feather weight containers, similar to those sent out by the firm for use with the British Army in South Africa, to the Arctic Expeditions, and Missionaries in various parts of the world.

First Aid Cases were in especial evidence, from the tiny one for Boy Scouts, to the larger ones that come in useful for Motor cars, or for those travelling in out of the way

places. A very interesting Show case was shown, in which the process of manufacture of the Alkaloids of Ipecacuanha, from the crude root to the finished products, Cephreline & Emetine Hydrobromide and which included the firm's "Vapoole," "Tabloid" Hypodermic Emetine Hydrochloride and Tabloid of the same product Keratin coated, came in for a good deal of attention.

"Tabloid" Quinine treatments, is supplied to the Governments of Bombay, Bengal, Eastern Bengal and Assam, and the Federated Malay States, were very prominent.

Wellcome Bi and Chemicals & Galenicals, including the Physiologically Standardised Concentrated Tinctures and Liquid Extracts, Chloroform and Bismuth Salts, were also shown.

Space forbids us to mention all the various cases and products shown, but each and all were up to the high standard of the firm and we have to heartily congratulate them on the exhibit.

MESSRS BUTTERWORTH & CO, (India) Ltd., of 6, Hastings Street, Calcutta, have issued a very interesting list of Medical books sold and published by them. They are from the list of Messrs D Appleton & Co. They include Osler's Medicine, Kelly's two great books of Gynaecology, Keye's Syphilis, Foote's Minor Surgery, Rinckau's Preventive Medicine, Genter's Urology, Pusey's Dermatology, Hiss Zinsser's Bacteriology, Kolle's Cosmetic Surgery, Dieulfoy's Medicine, Kleb's Tuberculosis, and many other well known books.

Digalen (Hoffmann La Roche Chem. Work, Ltd.), has been put on the market in the form of hypodermic tablets.

It has been introduced to supply the demand from medical men for a stable, accurate and convenient means of preparing a solution of "DIGALEN" for intramuscular injection at a moment's notice.

Each tablet contains 1.250 gm. of digitoxin soluble Cloetts and when dissolved in 15 minims of sterile, distilled water, forms a solution of the same strength as "DIGALIN."

EMETINE was one of the first alkaloids manufactured by the firm of E. MERCK of Darmstadt in 1840. The same firm's Chloroform for Anesthesia is a very pure preparation and now largely used in hospitals all over the world.

Messrs Ingram and Royle, Ltd., London, send us samples of their "NATURAL" Cuijsbad Spindel Salt. As so many imitations are on the market, it is important for physicians to prescribe the Natural salt. It is fairly well known that the waters of the Spindel supply the best and purest salt. The therapeutic uses of the salt are manifold.

We have received the new and revised edition of the "Progress Book" by Mellin Co., Ltd., which has been prepared to serve as a register of the physical and mental progress of a child.

Mellin Co., Ltd., will be happy to forward a copy of the "Progress Book" to the first hundred of our readers who are interested in the subject, upon receipt of a copy of this notice cut from the paper, with stamps to the value of 2/- annas to cover postage. It is a useful and interesting method of recording an infant's progress.

Service Notes.

THE LEAVE QUESTION

The difficulty of getting leave is with us again with the onset of the hot weather. This year in some Provinces it promises to be worse than usual. In the first place, the Service as a whole is shorthanded, and till substantial improvements in service prospects are announced, it is neither desirable nor likely that our numbers will be filled up. Again, the practice of taking long periods of leave, however desirable and right, has the now well ascertained effect of making leave difficult to get, one's turn for leave comes round after long intervals. It is possible that it will become soon necessary to recall to duty men at home who have already had a year's leave. It shuns them, but under the present circumstances we do not see how this extreme step is to be avoided if men are to get their fully earned leave at reasonable intervals.

SURGEON MAJOR WALTER FRY, Madras Medical Service, retired, of Kenmoe, Maidstone, died at Nice, after an operation, on 30th December 1913. He was born on 3rd March 1836 the son of John Fry auctioneer, of Greenwich, educated at King's College, London, and took the M.R.C.S. in 1858. In that year Major J. Moore placed at the disposal of the Council of King's College a nomination for a commission as Assistant Surgeon in the I.M.S. and Fry was selected by the Council as the best student among the applicants. He received a commission as Assistant Surgeon from 29th June 1858, became Surgeon on 29th June 1870, and Surgeon Major on 1st July 1873, returning on 20th November 1892. The Army List assigns him no war service. For his

first two years in India he served in the second European Regiment, and in the 11th Madras Infantry, from 1861 to 1866 in the 21st, in 1866-67 he was on furlough, in 1867 in the 4th N.I., and again took furlough in 1869. On his return to duty in 1870 he was posted as Residency Surgeon in Travancore, and held that appointment till he again went on furlough in 1879, and did not return to India.

LIEUTENANT COLONEL GEORGE HENRY BAKER, Bengal Medical Service, retired on 24th December 1913. He was born on 11th May 1860, educated at Charing Cross Hospital, took the L.S.A. in 1884, and the M.R.C.S. in 1885, and entered the I.M.S. as Surgeon on 1st October 1885, becoming Surgeon Major on 1st October 1897. Lieutenant Colonel on 1st October 1905, and reaching the selected list on 1st April 1910. He served in Burma in 1886-87, taking part in the operations of the sixth Brigade, and received the medal with a clasp, and on the North West Frontier of India in the Tirah Campaign of 1897-98, gaining another medal and clasp. After a few years' military duty, in 1899 he was posted as acting Residency Surgeon in Nepal. In 1891 he entered civil employment in the North West now the United Provinces. He held the civil surgeoncy of Cawnpur for several years, but his last station was Fyzabad, and since April 1912 he had been on furlough.

MATOR MAXWELL DICK, Madras Medical Service, retired on 13th February 1914. He was born on 14th March 1870, educated at University College, London, took the M.R.C.S. and the L.R.C.P., London, in 1884, and entered the I.M.S. as Surgeon Lieutenant on 29th July 1896, the very last man to enter the old I.M.S. before the combination of the three old Presidency Establishments of Bengal, Madras, and Bombay into the new General Service List. He became Captain on 29th July 1899, and Major on 29th January 1908, getting the six months acceleration of promotion. He served on the North West Frontier in the Tirah Campaign of 1897-98, and was present in the attack at Shukrampur on 29th January 1898, where he was slightly wounded, and was mentioned in Despatches G.G.O. No. 483 of 1898, receiving the Tirah medal with one clasp. His substantive appointment was a Civil Surgeoncy in Burma, but he had been on leave since 15th August 1912.

SURGEON MAJOR ROBERT DICK, Bombay Medical Service, retired, died on 14th October 1913. He was born in 1831, took the M.R.C.S. in 1854, and subsequently the M.D. of the Queen's University, Ireland, in 1861, and the F.R.C.S., England, in 1867. He entered the I.M.S. as Assistant Surgeon on 24th January 1855, became Surgeon on 24th January 1867, and Surgeon Major on 1st July 1873, retiring on 4th October 1876. The Army list resigns him no war service.

SURGEON GENERAL W.B. BANNERMAN, C.S.I., I.M.S., has been appointed Honorary Physician to the King.

DR T. SEBASTIAN, M.D., D.P.H., D.T.M., Deputy Sanitary Commissioner, on probation in Behar and Orissa, is confirmed in that appointment, with effect from the 1st December 1913.

CAPTAIN M.F. REANEY, I.M.S., M.B., LOND., D.P.H., has passed the examination of the London School of Tropical Medicine, "with distinction". Captain D.L. Graham, I.M.S., Captain R.F. Steel, I.M.S., and Major C.R. Bakhle, I.M.S., have also passed this examination.

CAPTAIN R. KELSALL, I.M.S., has obtained the Gold Medal of the University of London in Tropical Medicine (M.D.).

THE following I.M.S. officers have been also recently attending the London School of Tropical Medicine: Major J.J. UWIN, F.R.C.S., I.M.S., Major W. Lethbridge, I.M.S., Major H.M. Cundis, and Captain H.E. Short.

CAPTAIN S. HAUGHTON, I.M.S., while on study leave, completed a 5 months' course of Midwifery and Gynaecology at the Coombe Lying-in Hospital, Dublin, also a 5 months' course in diseases of Eye, Ear, Throat, and Nose at The Royal Victoria Eye and Ear Hospital, Dublin.

CAPTAIN S. HAUGHTON, I.M.S., took the M.D. degree of Trinity College, Dublin, in December, 1913, and passed the examination for the M.A.O. degree, Trinity College, Dublin, with Honours in June 1913.

MILITARY Assistant Surgeon has passed in Burmese by the Higher Standard, Captain P.L. Parapoo, I.M.S., and Captain C.H. Fielding, I.M.S., has passed the Lower Standard in Burmese.

In supersession of Bombay Government Notification No. 9361, dated the 25th November 1913, the Governor in Council is pleased to make the following appointments:-

Captain D. Fitzgerald, I.M.S., to act as Superintendent of the Central Prison, Hyderabad.

Captain W.A. Meurus, I.M.S., on relief, to act as Superintendent of the Central Prison, Ahmedabad.

The services of Captain D.D. Kumar, Indian Medical Service, are placed temporarily at the disposal of the Government of Bombay for civil appointment.

THE Hon'ble Surgeon General Henry Wickham Stevenson, C.S.I., is permitted to retire from the service, subject to His Majesty's approval, with effect from the 10th January 1914.

MAJOR R.M. DALZIEL, I.M.S., has been granted one year's combined leave from 9th December 1913, and Captain G.S. Husband, I.M.S., officiates as Superintendent, Central Jail, Multan.

MAJOR R.E. LLOYD, Indian Medical Service, Professor of Biology in the Medical College, Calcutta, sub pro tem., is confirmed in that appointment, with effect from the 11th December 1913.

LIEUTENANT COLONEL H.A. SMITH, M.B., I.M.S., Civil Surgeon, Simla (East), is granted privilege leave for one month, with effect from the 19th January 1914.

LIEUTENANT COLONEL C.H. JAMES, C.I.E., F.R.C.S., I.M.S., Civil Surgeon, Simla (West), is appointed to officiate as Civil Surgeon, Simla (East), during the absence on leave of Lieutenant Colonel H.A. Smith, M.B., I.M.S., in addition to his own duties.

THE Department of Education Notification No. 1795, Sanitary, dated the 26th November 1913, replacing the services of Major R. McCullison, I.M.S., at the disposal of the Foreign Department, is hereby cancelled.

CAPTAIN H.R. DUTTON, I.M.S., Officiating Health Officer and Civil Surgeon of the notified area, Delhi, was on privilege leave from the 3rd June 1913 to the 2nd September 1913.

The services of Captain H.R. Dutton, I.M.S., are replaced at the disposal of the Government of Bengal, with effect from the 3rd September 1913.

2. The Department of Education Notification No. 1290, Sanitary, dated the 8th August 1913, is hereby cancelled.

FIRST GRADE ASSISTANT SURGEON ASUWAL ISURDAS JHANCIANI has been awarded a Lungie, value Rs. 30 and an Afzamama by Government for good and meritorious services at Jacobabad.

MAJOR W.F. HARVEY, M.B., I.M.S., Director, Central Research Institute, Kasauli, is granted privilege leave for three months and in continuation study leave for six months and furlough out of India for one year and three months, with effect from the 5th February 1914 or any subsequent date from which he may avail himself of the leave.

BREVET MAJOR S.R. CHRISTOPHERS, M.B., I.M.S., Assistant Director, Central Research Institute, is appointed to officiate as Director, Central Research Institute, during the absence on leave of Major W.F. Harvey, M.B., I.M.S., or until further orders.

THE services of Lieutenant-Colonel E. Jennings, I.M.S., are, on his return from leave, replaced at the disposal of His Excellency the Commander in Chief in India.

MAJOR W.M. PEARSON, I.M.S., Civil Surgeon, Mirzapur, was granted privilege leave for one month with effect from the 15th December 1913.

CAPTAIN W.P.G. WILLIAMS, I.M.S., has been granted by His Majesty's Secretary of State for India permission to return to duty.

CAPTAIN J.F. BOULD, I.M.S., was placed on plague duty at Berries for training from the 6th to the 12th December 1913, both days inclusive.

CAPTAIN H.P. COOK, I.M.S., was on plague duty for training at Fyzabad from the forenoon of the 23rd September to the afternoon of the 2nd October 1913.

ON return from the combined leave granted to him in Government of India, Public Works Department, Notification No 46, dated 12th September 1912, and subsequently extended by Punjab Government Notification No 206, dated 5th June 1913, Major E L Wurd, I M S, resumed charge of the duties of Superintendent of the Lahore Central Jail on the afternoon of the 8th December 1913, relieving Captain G S Husband, I M S.

CAPTAIN A H PROCTOR, I M S, made over charge of the Hooghly Jail to Major J W F Rait, I M S, on the forenoon of the 28th December 1913.

ASSISTANT SURGEON JATINDRA NATH GUPTA made over charge of the Comilla Jail to Captain F A F Barnardo, I M S, on the forenoon of the 10th January 1914.

LIEUTENANT COLONEL A H NOTT, I M S, made over charge of the Howrah Jail to Major E E Winters, I M S, on the afternoon of 8th January 1914.

THE following promotions are made, subject to His Majesty's approval —
Senior Assistant Surgeons and Honorary Lieutenant
Thomas Henry Bonnai,
Christopher Alfred Frimer,
John Robertson,
William Daniel Neal, seconded,

to be Senior Assistant Surgeons with the honorary rank of Captain and seconded
Senior Assistant Surgeon and Honorary Lieutenant Arthur John Archey to be Senior Assistant Surgeon, with the honorary rank of Captain

1st Class Assistant Surgeon William Thomas White to be Senior Assistant Surgeon with the honorary rank of Lieutenant, vice Senior Assistant Surgeon and Honorary Captain A D Cotton, retired, with effect from the 8th December 1913.

The undermentioned 3rd Class Assistant Surgeon having completed seven years' service in that class and passed the required departmental examination, to be 2nd Class Assistant Surgeon, with effect from the 21st April 1914 —
Robert Frederick Browne.

CAPTAIN H ROSS, I M S, Officiating Civil Surgeon, was on study leave from the 6th October to the 6th December 1913.

MAJOR T HUNTER, I M S, Civil Surgeon, was on study leave from the 22nd September to the 21st November 1913.

CAPTAIN J F BOYD, I M S, Officiating Superintendent, Central Prison, Bareilly, on being relieved, has been posted to Balia on plague duty.

MAJOR M H THORNELY, I M S, Civil Surgeon of Shahababad, is allowed combined leave for eight months, viz, privilege leave for two months and seventeen days under Article 260 of the Civil Service Regulations and furlough for the remaining period under Article 308 (b) of the Regulations, with effect from the 8th February 1914, or any subsequent date on which he may be relieved.

MAJOR V E H LINDELEY, on leave, is appointed to act as Civil Surgeon of Shahababad during the absence on leave of Major M H Thornely, I M S, or until further orders.

THE Commander in Chief in India is pleased to make the following appointments —

Major J M Sloan, D S O, R A M C, to be Deputy Assistant Director of Medical Services (Mobilization), 3rd (Lahore) Division, with effect from the 14th December 1913.

Major E V Aylen, R A M C, to be Specialist in Dermatology, 2nd (Rawal Pindi) Division, with effect from the 15th December 1913.

Captain A W M Harvey, Indian Medical Service, to be Specialist in Prevention of Disease, and in charge of the Brigade Laboratory, Dehra Dun, with effect from 17th December 1913.

Captain C H Boddiabb, Indian Medical Service, to be Specialist in Advanced Operative Surgery, with effect from 1st January 1914.

Captain A H T Davis, R A M C, to be Specialist in Electrical Science, 6th (Poona) Division, with effect from the 23rd December 1913.

UNDER the provisions of Article 233 of the Civil Service Regulations and with reference to paragraph 358 of Army Regulations, India, Volume I, leave out of India for nine months on account of ill health is granted to Captain A T Priddy, M B, I M S, Superintendent of Jail, sub *pro tem*,

in continuation of the privilege leave for three months granted to him in this department Notification No. 185, dated the 11th December 1913.

THIS department Notifications Nos 188 and 189, dated the 17th December 1913, regarding the postings of Captain A T Priddy, M B, I M S, and Captain P K Tarapore, I M S, to the charge of the Mandalay and Insein Central Jails respectively are hereby cancelled.

CAPTAIN H HALILAY, I M S, was compulsorily recalled from privilege leave for special duty with the Clerical Service Committee, Lahore, and on completion of that duty was posted to Lyallpur as Civil Surgeon.

CAPTAIN H C KATES, I M S, was appointed Plague Medical Officer, Hoshiarpur, from 10th January 1914.

MAJOR T A GRANGER, I M S, has been given a Brevet Lieutenant Coloneley with effect from 1st January 1914.

MAJOR H M MACKENZIE, I M S, assumed charge of the office of Officiating Professor of Pathology, Medical College, Lahore, with effect from the forenoon of the 10th October 1913, vice Major W H C Foster, I M S, who proceeded on leave.

MR E F HOTTINGER, Civil Surgeon, Gujarat, has been declared to have passed the prescribed test in the compulsory colloquial examination in the Punjabi language for medical officers posted to the Punjab for Civil employ as Civil Surgeons, held at Lahore on 31st November 1913.

ASSISTANT SURGEON E PHILLIPS made over charge of the duties of Superintendent of the District Jail at Lyallpur to Captain H Halilay I M S, on the afternoon of the 3rd January 1914.

Notice.

SCIENTIFIC Articles and Notes of interest to the Profession in India are solicited. Contributors of Original Articles will receive 25 Reprints gratis, if requested.

Communications on Editorial Matters, Articles, Letters and Books for Review should be addressed to THE EDITOR, *The Indian Medical Gazette*, c/o Messis Thackeray, Spink & Co, Calcutta.

Communications for the Publishers relating to Subscriptions, Advertisements and Reprints should be addressed to THE PUBLISHERS, Messis Thackeray, Spink & Co, Calcutta.

Annual Subscriptions to "The Indian Medical Gazette," Rs 12, including postage, in India Rs 14, including postage, abroad.

BOOKS, REPORTS, &c, RECEIVED —

- Musser's Medical Diagnosis, H Kempton Price, 25/-
- Dercum's Mental Diseases, W B Saunders & Co
- Murphy's Surgical Clinics, Vol II, No 5 W B Saunders & Co
- Report of Bombay Medical Union
- T Lewis' Clinical Disorders of Heart Beat (2nd Ed) Shaw & Sons
- Dorland's Illustrated Medical Dictionary 7th Ed W B Saunders & Co
- Dorland's Pocket Medical Dictionary, 8th Ed W B Saunders & Co
- Cambridge's Faces of Children and Adults Price, 17s 6d John Wright & Sons, Ltd
- University College, Research Dept Reports, Vol III, (Nov) Miller's Practical Pathology A C Black (Edinburgh Medical Series) Price, 7s 6d
- Gruner's Biology of the Blood Cells John Wright & Sons, Ltd
- Cle's Mental Diseases 10s 6d London Medical Publications
- Tox Pitt's The Purpose of Education Cambr Univ Press
- Wauklyn's Administrative Contest of Small pox 3s 6d Longmans Green & Co
- Thackeray's Medical Directory 1913 Thackeray, Spink & Co
- Butterworth & Co (India), List of Books
- Mellin's, The Progress Book
- Rosenau's Preventive Medicine Butterworth & Co (India) Calcutta
- Taylor's Sanitary Inspector's Handbook, 5th Ed (6s) H K Lewis

LETTERS, COMMUNICATIONS, &c, RECEIVED FROM —

- Capt H C Barber, I M S, London, Lt Col D G Crawford Ealing, W Dr A Neve, Kashmir, Capt Berkely Hill, 1st Lt, 1erowda, 81 F C S Thompson, I M S, London Lt Col L Rogers, I M S, Calcutta, Lt Col Jennings, I M S, Bombay, Maj Maducock, I M S, Lt Col Hudson, I M S, Dharwar, Dr Baldwin Seal Darjeeling, M J D Munro, I M S, Jalpaiguri Col Hehir I M S, Porna, Lt Col Barry, I M S, Rangoon, Lt Col G Milne I M S, Mussoorie, Dr S B Pat, I Cak, Capt Whitmore, I M S, Rangoon, Capt S Haughton, I M S, Dublin, Dr Chatterjee Calcutta, Capt Fraser, I M S, Madras Lt Col G Milne, Mussoorie, Capt G W Bradfield, I M S, Madras

Original Articles.

ITINERATING DISPENSARIES

By H E DRAKE-BROCKMAN,

Lt Col, I.M.S.,

Director, Medical Department & Sanitary Commission, H.H. the Nizam's Dominions

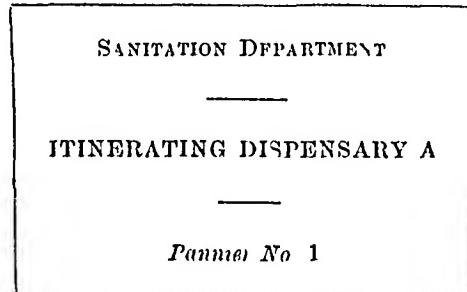
THE value of these useful little institutions is being almost universally recognized in this country and in some parts of India these have already been organized on a fairly large scale, e.g., the United Provinces of Agra and Oudh, as, however, I have been asked for information from a good many sources regarding the actual materials used in those I have inaugurated here, I have thought that perhaps a short article on the subject to the leading Medical Journal in this country might in a general way supply the necessary information to those interested in the subject. It would be interesting to ascertain the origin of these useful institutions, for though I myself have for many years organized and carried one about with me almost every cold weather, fully equipped practically for every emergency, I am rather inclined to think that the credit for initiating this excellent method of medical relief amongst the people to any appreciable extent belongs to Christian missionaries in this country. Most district Civil Surgeons in India have for many years past in their outlying dispensaries performed a large number of surgical operations, but these have been for the most part confined to such institutions, and I fancy it is chiefly medical officers in political employ who have to any appreciable extent carried medical relief to the homes of the people in far outlying parts of their charges in camp during their cold weather tours within their respective spheres of duty, which often extend to a few months on end according to the size and character of the country traversed. To my mind, there is no surer way by which to put a stop to the hordes of quacks who infest the country, and rescue the unsophisticated villagers from the clutches of such, than the inauguration of these most useful little institutions on a large scale. These itinerating dispensaries will also help us not only in district sanitary work but in the spread of vaccination and in getting the trust and active sympathy of the people on our side in the campaign against the chief scourges which affect them. I refer to malaria, cholera, plague and small-pox, most of which should in time be very materially decreased, if not stamped out. The officers in charge of these dispensaries can also be very instrumental in the dissemination of

"First Aid" principles and sanitary knowledge amongst the masses in various ways, not the least of which is the distribution, with medicines, wherever they go, of literature bearing on sanitation written in the simplest language and so that every villager can understand. This can be very materially enhanced by the aid of a magic lantern on their tours in villages where whitewashed walls can be made use of, on which to throw pictures relating to such subjects, as is done frequently by missionaries in this country. Without going into further details as regards administrative questions relating to these excellent little institutions, I will now give a brief description of the pattern of pannier, etc., I have devised, and which are at present being utilized for this purpose in my charge. It must be remembered that, as these dispensaries have so much moving about to do, they must first of all be composed of light sections, a heavy wooden case for such will never do, it will assuredly suffer from rough handling and its contents be speedily demolished, and this has been taken into consideration in my pattern. The actual dispensary consists of (a) two panniers completely fitted and with tablets for all emergencies, (b) a wooden case containing drugs and materials for replenishing their stock as occasion arises (kept in charge of the Civil Surgeon of the the district at its head-quarters in his capacity of District Sanitary Officer under whose direction these itinerating dispensaries here work), (c) one satchel containing the necessary materials for plague inoculation and cholera infusion of every kind. This latter is all compactly made and fitted into a waterproof cover fitted with webbing sling and can at a moment's notice be worn over the shoulders and taken on a pony to any place without the trouble of extracting any portion of the contents of the panniers themselves. The panniers themselves are made very light and strongly supported by iron framing, and when filled do not weigh more than about 100lbs. each. They have, moreover, attached to them the necessary folding legs, etc., to make them into tables, etc., which does away with the necessity for carrying about tables and chairs at a pinch, and in hilly country where every extra package becomes a nuisance to transport! The addition of this arrangement to each pannier has added very little to the cost indeed, or to its weight, it has, however, at same time enabled the officer in charge to ensure his panniers from damage from white ants, damp, etc., both of which are very prevalent in this part of India. The accompanying description and sketches will fully describe my particular pattern of panniers, a sketch plan of whose contents and their distribution therein can, if desired, be obtained directly from the manufacturers, Messrs Rughnath Rai & Co of Lahore, who have taken out a patent therefor, recently.

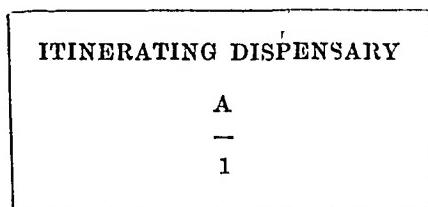
Description of panniers devised by me for use in the Sanitation Department of H.H. the Nizam's Dominions

(1) Each set of panniers composing a Travelling Dispensary is numbered and labelled "Itinerating Dispensary" "A," or "B," or "C," and so on. The above designation is painted in large yellow block letters on the top of the outer casing of the panniers and also the sides, in order to designate them, as follows —

(a) On top of the outer casing —



(b) On both sides below handles of the outer casing of the above panniers, thus —



(2) The panniers are painted dark vermillion and all the lettering and figuring done in yellow. The red colour is specially selected for the outer casing, as this is the best possible for preventing the heat of the sun from penetrating the panniers, and so spoiling their contents.

(3) The inner wooden cases are raised on blocks of wood 2" square (one on each side), running right through the under surface of the same from back front so as to leave a space below between the case and the outer cover. This gives better support to the wooden inside case of these panniers and enables it to lie evenly in their wicker cases and possibly prevents concussion to contents of panniers in case of fall or injury, and if taken out at any time for purpose of refilling contents, allows of its being firmly placed flat on a table. The space in each pannier above alluded to is about 2" deep and in it is fitted, in case of No 1, a strong folding canvas stool—other articles such as splints, registers, tow, bundles of wood, etc., can be filled into corresponding space in pannier No 2, such an arrangement also facilitates the opening of all the lower drawers obviating jamming of them by the front drop-down lid, as was found to occur in O'Gorman's pattern.

(4) The cross-bar (which is used to keep the internal wooden portion of the pannier in its place in the cane-work) is removable, two nuts

being provided at each end of the bar, which are made to unscrew when required, this arrangement also considerably strengthens the front portion of pannier at same time. The ends are not riveted, as was done in the pattern referred to.

(5) The front portion of pannier drops down and is capable of being used as a table for dispensing as well as for writing, as required. For the former purpose the zinc plate inserted therein is used and a tablet containing sheets of blotting paper can be slipped into a groove and fixed by a simple arrangement rendering it capable of instant removal. The blotting papers are inserted into an aluminium frame and the whole is made to slide in and remain fixed above the zinc plate, so that when the latter is required for making plasters, etc., the frame containing the blotting papers can be easily drawn out of its groove in the zinc plates. The four German silver strips at the corners of this zinc plate are made deep, so as to hold at least 6 to 8 sheets of blotting paper, if necessary.

(6) In order to hold this front drop-down portion in position and to enable it to sustain pressure while writing, etc., two flat bars of iron have been fixed on lateral hinges underneath panniers, in such a way as to allow of them being pulled out from beneath pannier, remaining in position while in use, and sliding back under the pannier when packed up, these props can, if the panniers are being used for any long period be fixed by a terminal thumb nut which can be quickly screwed up.

(7) Underneath, the panniers are provided with folding legs made of iron in order to allow of them being used also as tables. This is most essential and necessary for camping purposes and rapidly moving about districts where it may be difficult to carry about camp furniture, and at the same time prevents white-ants attacking the bottoms of panniers, which frequently may in these parts occur in one night, if left on ground. These folding legs have been so arranged as to fold flat underneath the panniers when not in use, and during transit, and after folding are kept in position by leather straps. The legs when in use are held in position by a cross-bar of iron which is made detachable and fits into the angles and helps to keep the legs rigid and firmly apart.

(8) The legs of the panniers have been placed at such height as to allow an individual to sit comfortably at them and work. The stool (supplied with each set) when in use is 16 inches high and leaves a clear space of 7 inches between the front drop-down lid (which is used as the table) and the iron canvas stool, allowing ample space for a man to sit comfortably at it and work.

(9) One such portable iron and canvas stool (as shown in sketch) is supplied with each Itinerating Dispensary. The dimensions of each stool

ITINERATING DISPENSARIES

By LT-COL H E DRAKE BROCKMAN, I.M.S.

Director, Medical Department and Sanitary Commissioner, H H the Nizam's Dominions.

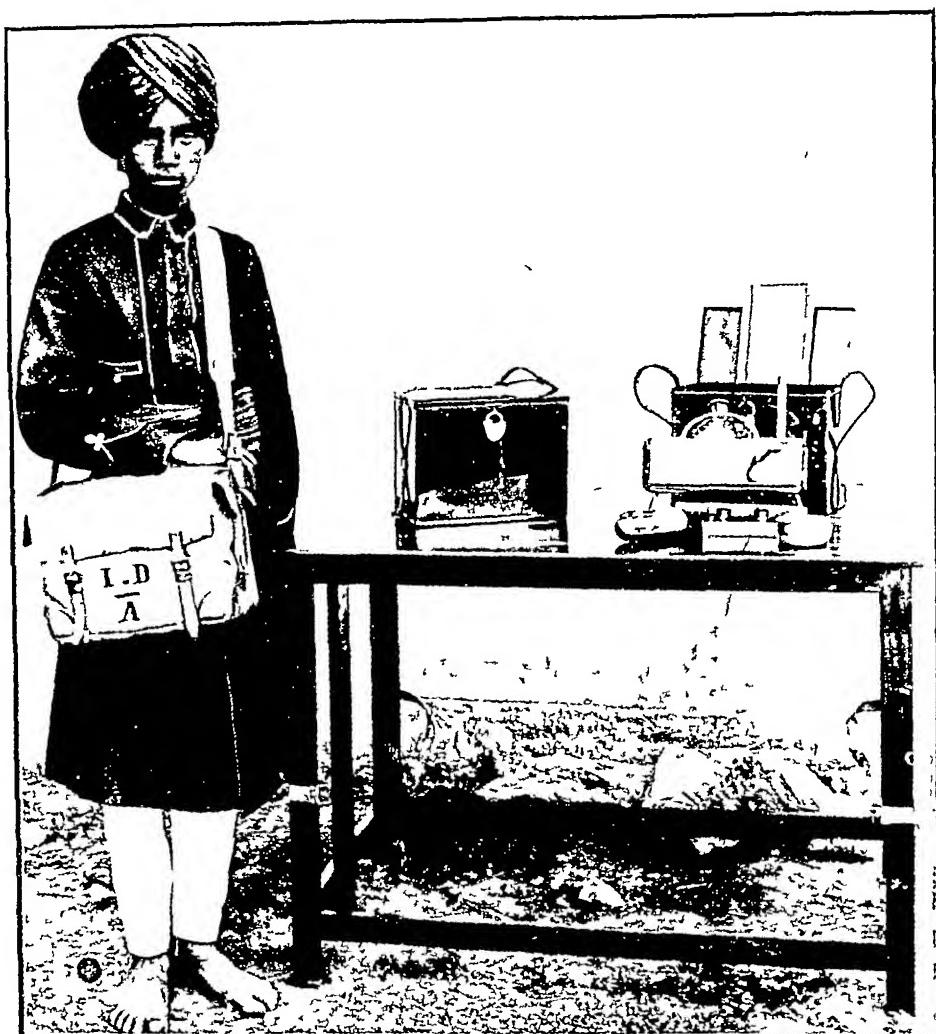


PHOTO No I.—Shows contents of satchel placed out on table and the sterilizer for cholera infusion and plague inoculation ready for use



PHOTO No II.—Haversacks carried by bullock

ITINERATING DISPENSARIES

By LT COL H E DRAKE-BROCKMAN, I M S

Director, Medical Department and Sanitary Commissioner, H H the Nizam's Dominions



PHOTO No III—Shows two coolies taking the pannier bangly fashion.

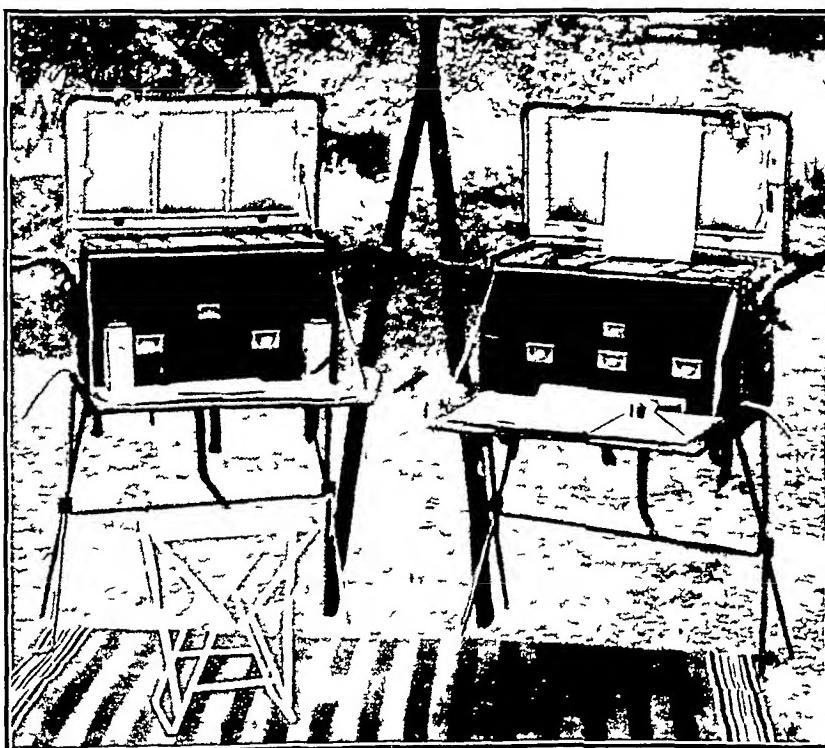


PHOTO No IV—Haversacks open and ready for use

when folded are $11\frac{1}{2}$ inches long, 8 inches wide, and 1 inch deep. This pattern of stool when folded fits comfortably into the space under the wooden casing of either pannier, is very strong, and can be purchased for a very small sum at the Army and Navy Stores London or Bombay.

(10) The upper surface of the teakwood lid of the locker for keeping poisons in pannier No 1 is fitted with a glazed slab, which is let into the lid, the slab being kept in position by two brass clips, one on each side, centrally, to allow of easy removal for cleaning. This slab can act if necessary, as a small dispensing table for crushing tabloids or making powders, pills etc. A cushion on the lid of the pannier is placed over each section of the pannier in order to prevent damage by shifting of contents, if such should get loose at any time, but this has been made practically impossible.

(11) The under surface of the lid of the poison locker is also similarly padded with cushions in order to prevent any damage to the contents of the locker during transit.

(12) The wooden case is provided with drop-down brass handles, which slip in and out of a slot on each side and can be pulled out when required.

(13) To strengthen the actual body of the cane-pannier generally, two bands of iron (2" wide by $\frac{1}{8}$ " thick) are fixed parallel to each other longitudinally, with rivets, and two similar bands of iron are also riveted into the inside of cane-pannier on sides as well as bottom. Such an arrangement prevents the cane basket from giving way when the inner wooden casing duly fitted with medicines is placed inside it and also considerably strengthens the pannier.

(14) The whole of the inside of the wooden casing (and in fact, wherever there is wood exposed) has been carefully varnished, in order to prevent warping and absorption of moisture.

(15) Strong rope handles at both sides have been added and made long enough to allow of a bamboo being passed through and the panniers being carried banghy-fashion by two coolies, when necessary. The rope handles are covered with leather to prevent damage by wear and tear of the rope, when the bamboo pole is used for transport.

(16) One bamboo is supplied with each pannier. Each is of well-seasoned wood and varnished, and is provided with a cap of iron 3 inches long, closely fitted at the ends. The length of each bamboo is 6 feet.

(17) Strong iron rings are provided at back of each pannier, so that such can be conveniently slung on back of any transport animal locally procurable, e.g., bullock, pony, etc.

Note—Pannier No 2 has three cushions on lid as pannier No 1, but without the glazed slab.

In all other respects the improvements and alterations are similar to pannier No 1.

My pattern of pannier has been supplied for all the Itinerating Dispensaries in use in the Sanitation Department of H H the Nizam's Dominions, and has been patented in India and England by the makers, Messrs. Rughnath Rai & Co of Lahore, and are only a very little more if anything in cost than the usual patterns sold. They have been made entirely by Indian workmen, and, I consider, have been very well done.

Each Itinerating Dispensary is also provided with a portable case containing all the apparatus necessary for saline infusion in cholera (by any method, intravenous, peritoneal or rectal) with the apparatus necessary for estimating the specific gravity of the blood, as well as that necessary for plague inoculation. A metal-flame has been made to fit tightly into sterilizer in order to hold its contents firmly. This flame when not in use is, of course, removed and placed under the sterilizer, acting as a wind guard to the flame of the spirit lamp, which is usually, unless protected from wind, useless in the open air. All is neatly fitted into a metal sterilizer in case with a thermometer in wooden case, for which accommodation has been provided in lid of satchel, the whole being enclosed in a strong satchel of Willesden canvas bound with leather and with a broad webbing sling for wear, the mark of the Itinerating Dispensary to which such belongs being duly designated thereon in the front of same. This allows of rapid and easy transport of the necessary apparatus to any outlying village without taking along the whole armamentarium of the Itinerating Dispensary in way of pannier, etc., in any emergency. Fig 1 shows satchel and contents opened out for inspection.

A full supply of medicines in tabloid form is kept at the head-quarters of each district in charge of the District Sanitary Officer, from which offices in charge of Itinerating Dispensaries replenish their stock, as necessity arises. These panniers as regards contents, shape, etc., are of course capable of any modification to suit local conditions and requirements, but from experience in such matters I would not advise them being made any larger or heavier.

CHRONIC INTESTINAL STASIS.*

BY FLEMING BARNARDO, M.D., M.R.C.P.E.,
CAPT., I.M.S.

THE subject of chronic intestinal stasis is important, because practically, this, among most recent advances in medical science, is the one which can throw most light on the diseases that affect the human body.

Of all the various systems of the Practice of Medicine in vogue among you at present, such as Allopathy,

* An address delivered before the Comilla Medical Society on 1st March, 1914.

Homœopathy, Hakimi, Kabiraji, &c., &c., each claims its own staunch adherents, each exists as a separate system on the ground of the treatment of gastro intestinal diseases alone on other diseases, each system practically is agreed as to the line of treatment. The ancient epigram among you never had better exemplification—"A difference of opinion among councillors, who are wise and all are wrong." The certainty now is that all are wrong in their conception of the alimentary tract. Of the importance of the alimentary tract there can be no doubt, on its integrity depends the health of the whole body, it is the largest absorbing mucous membrane in the body and it is peculiarly exposed to infection.

Physiologists have made it quite clear by their recent advances in the physiology of digestion that the alimentary tract performs its functions as a whole. No one part functionates, except under the influence of the portion above by the means of specific and distinctive hormones, and in addition to these complex hormones we have the various portions alternating in simpler, grosser, chemical reactions, *e.g.*, Alkaline mouth-acid, stomach-alkaline, duodenum acid, colon, each in its turn dependent for its degree of acidity or alkalinity on the level of alkalinity or acidity of the portion above. Hence it is reasonable to suppose that pathological changes in the alimentary tube must not and cannot be isolated and regarded as separate entities, *e.g.*, appendicitis, gastritis, &c., as has been done in the past. These are merely the end results of a disordered tract and if treated as separate entities, uniformly good results will never be obtained.

The recognition of such a condition as chronic intestinal stasis has placed the pathology of the alimentary tract on a sound basis and in the therapeutics of intestinal pathological changes we must be careful to regard the tract as a whole organ from mouth to anus. By chronic intestinal stasis we mean such a delay in the contents of the tract that it involves the absorption of substances contained therein which act as poisons, these being absorbed in larger quantity than can be effectively dealt with by the defence organs of the body. This may be regarded as a defective outflow in the drain pipe of the system.

The symptoms we group under this head, following the description of Sir Aibuthnot Lane, are briefly as follows, and all of us among our patients will be able to have numerous examples—

Loss of fat—wasting of muscles, degenerative changes in the skin, in its texture and color. Pigmentation frequently so extensively as to suggest suprarenal inefficiency, as a primary disease.

Cold hands and cold feet—a mental condition of apathy or stupidity melancholia or hysteria or neurasthenia. These patients sleep badly, they have little refreshment from what sleep they may be able to obtain. Neuralgias and neuritis are common complaints, frequent headaches, disinclination for work of any kind, rheumatic pains in joints and limbs, low blood pressure, in woman, degenerative changes in the breasts, a degeneration which leads to cystic changes, degenerative changes in heart and aorta giving a deficient elasticity, causing inadequate emptying of the aorta and giving rise to dyspnoea on exertion, then atheromatous changes in the smaller vessels everywhere, the strain on the kidneys by the increasing amount of circulating toxin causes an early appearance of those inflammatory changes which are known as Bright's disease (indoxyl compounds being found in the urine in large quantities). Changes in the thyroid gland I will defer till a subsequent meeting. The hair of the head falls out rapidly and loses its colour, the pancreas is soon infected, and becomes indurated and gives rise to the symptoms of pancreatic dyspepsia and pancreatic diabetes, similarly the ducts of the liver when infected give the symptoms of cholecy stitis, gallstones, jaundice, &c.

Then there are indirect changes which are the result of diminished body-resistance to infection, such as

pyrrhoea alveolaris, tubercular and rheumatic manifestations, as we shall see later.

Before 1890 Glenaid had described cases presenting a group of symptoms very similar to these, and attributed everything to viscieloptosis or a falling of the abdominal viscera. His picture was most accurate, and most of his recommendations as to treatment, are still trustworthy and reliable.

In 1904 Bouchard brought new light on the scene and opened up a new explanation of the chief disorders that affect man in his doctrine of intestinal auto intoxications.

Most people feel miserable if their bowels are not thoroughly open—advertisements for opening pills assail us at every railway station, the sale of purgative medicines has produced colossal fortunes—the popularity of all the continental health resorts as Carlsbad, Homburg, Vichy, depends almost entirely on the efficacy of their aperient waters. The British Pharmacopœia contains more aperient medicines than all other diseases put together. Further, clinically, the improvement in the comfort of most individuals after a purgative is taken, justifies us in the conclusion that some products have been got rid of which are not convenient to the body health. Thus the question of toxæmia will be admitted—the problem in front of us is, what is the poison, and where is the seat of its formation?

The toxins of the alimentary canal are very varied and very difficult to isolate or to classify. Firstly, they may be either bacterial in origin or they may be purely chemical in nature as protein derivatives, etc.

It would be impossible to do more than just touch on the subject of the flora of the alimentary canal, but let me remind you that bacteria may form toxins (1) by splitting up proteins into poisonous substances, or (2) by the specific products of their life and growth (exogenous), or (3) the contained substances in their bodies, set free after dissolution (endogenous). Heller has divided them in two main groups—

1 A group including the *B. aerogenes capsulatus*, found mostly in the colon.

2 A group forming Indol—such as the *B. Coli*.

These invade the small intestine and their activity is marked by the appearance of indoxyl compounds in the urine.

In this connection I would impress on you the importance in all obscure gastro intestinal cases of testing for indoxyl compounds in the urine, it indicates a change in the nature of the contents of the small intestine and it is often the first clue to the seat of the disease—*e.g.* Here is a case of obstinate headache and sleeplessness for the last four years with abdominal pain and constipation, the urine presented large quantities of indoxyl compounds pointing to invasion of his small intestine by coli due to alimentary stasis. 3 weeks' treatment has been sufficient to banish the headache and to enable him once more to look with a feeling of hope on the things of the world.

Here is another case of sciatica, duration 3 years, on which a small portion has been spent in obtaining nerve stretching, injection of saline, etc., etc., to no effect, the urine examined showed a deposit of indigo on standing, stasis was indicated and in the absence of an X-ray examination, a long dilated pelvic colon was made out per rectum, probably pressing on the pelvic nerves causing pain to be referred as sciatica. One week's treatment of this "puddling" pelvic colon and consequent stasis was sufficient to effect a complete cure.

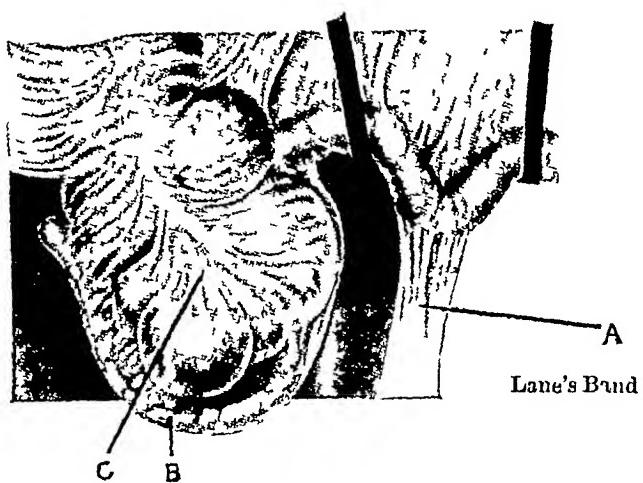
Andrewes is of opinion that as far as toxæmia from intestinal bacteria is concerned, it is limited to that caused by the results of their cleavage of proteins beyond the power of the ordinary digestive ferments to deal with the formation of products which the body is not accustomed to and is unable to neutralize.

Then there are many alimentary toxæmias which are not bacterial. There are vegetable poisons such as ergot, solanine, etc., etc., which are highly toxic, there are also animal poisons in animal foods containing leuco-

CHRONIC INTESTINAL STASIS

BY CAPT FLEMING BARNARDO, M.D., M.R.C.P.E., I.M.S.

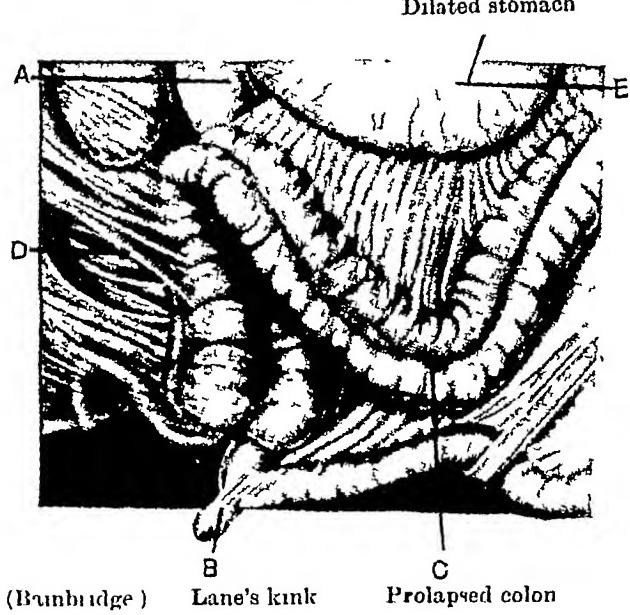
FIG 1



(Bainbridge)

A — Lane's Band
B — Appendix
C — Cecum mobile

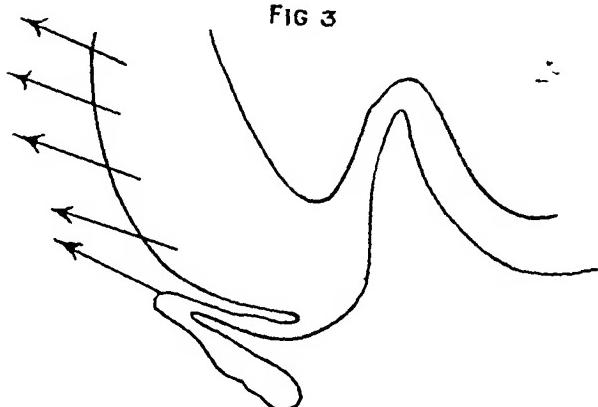
FIG 2



(Bainbridge)

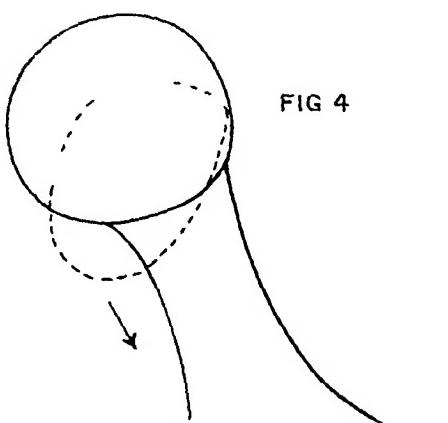
B Lane's kink C Prolapsed colon

FIG 3



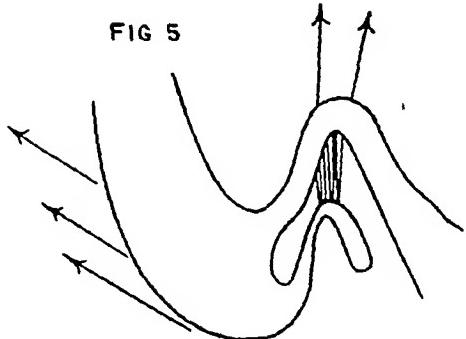
Appendix grasped about its middle by the outer group
(Lane)

FIG 4



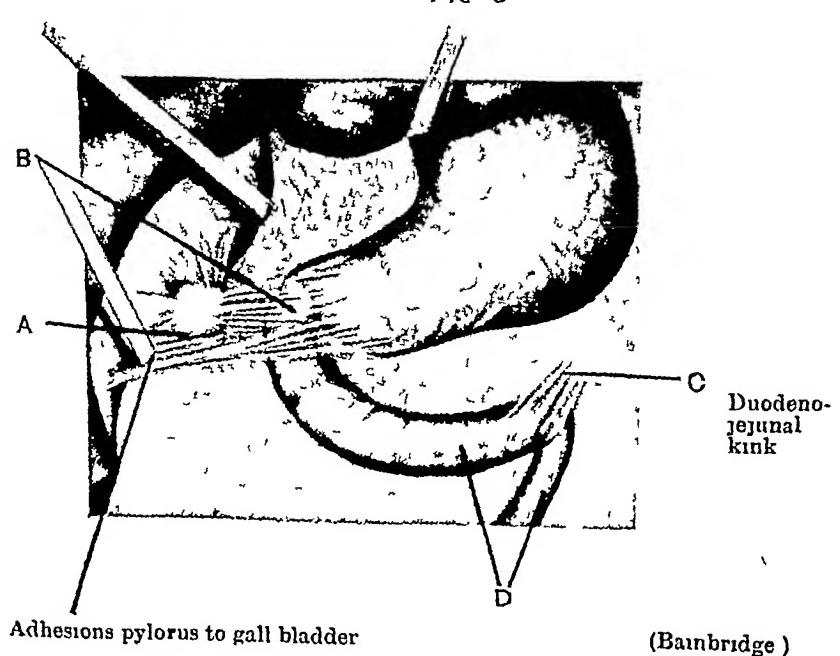
Torsion of the ileum at the kink
(Lane)

FIG 5



Appendix grasped about its middle by the
inner group (Lane)

FIG 6



Adhesions pylorus to gall bladder

(Bainbridge)

maues and ptomaines, as the mytilotoxin of shell fish, which readily cause symptoms of the greatest gravity—although in this connection it is not clear how far the reaction of the system savours of what you know as anaphylaxis.

The digestive processes break down foreign proteins into simple groups, which are built up by the liver again into such groups as are suitable for the body for food, and further the function of the liver consists in shielding the blood against a high proportion of the toxin of foreign proteins.

When this function is in abeyance toxæmia results as will be seen in cases of—

- (1) Eck's fistula,
- (2) acute yellow atrophy,
- (3) puerperal eclampsia (some cases),
- (4) the grave hepatic cirrhosis resulting from long standing non alcoholic intestinal catarrh. With excess of Ammonia products in the portal vein.

That there should be a high proportion of toxins in the alimentary canal liable to cause serious results, can only be explained by the intestinal contents being retained longer than normal, for in chronic intestinal stasis the bacteria are probably the usual ones found within the intestine, while their number is probably vastly increased and the contents themselves are probably profoundly altered, chemically. The bacterial origin is sufficient for Metchnikoff, while Lane insists on an additional and primary factor, *i.e.*, mechanical obstruction to the flow of the contents themselves causing their retention, and raising their level of infection.

Metchnikoff insisted on the large intestine being the seat of the bacteria producing indol which he regards as the potent factor in the symptom-complex of auto intoxication and in addition the essential cause for the sclerotic changes in organs which accompany old age. He introduced, as you may remember, some 8 years ago the treatment by Bulgarian milk as a panacea for all the ills that the human body is prone to, your ancestors, gentlemen, were as wise in instituting "dahi" as an article of diet amongst you, but good as it is, it cannot be said to be fulfilling what Metchnikoff claimed for it, *i.e.*, a life piolonger, for do not think that one can conscientiously affirm the longevity of the Indian races, rather the reverse.

Other workers in the biochemical field have not corroborated the results of Metchnikoff, and his school, but most bacteriologists incline to the view that the primary factor is an alteration in the digestive ferments, which either allows ptomaines to be formed or bacteria to develop in abnormal numbers. Some go so far as to say that the mouth is the starting point of all diseases of the alimentary tube, adducing pyorrhœa alveolaris as an example, whereas, of course, pyorrhœa is not a primary disease but a mere end result.

Lane, however, in 1912 pointed out that owing to injudicious diet in childhood, and to the erect attitude, certain bands develop, which had been formed by nature, to hold up the sagging intestine, these bands formed kinks and mechanical obstruction resulted, and he claimed that in the mere mechanical obstruction, you had an adequate explanation for any retention and absorption, and he insisted that it was not necessary to search for any bacterial factor, beyond that which such retention would of necessity involve.

In this connection, it must be remembered that in 1902 Metchnikoff, a bacteriologist, Barclay Smith, an anatomist, and Lane, a surgeon, all came to the conclusion that the colon of man was not only a useless organ, but was a pernicious one,—and this by entirely different processes of reasoning. This was a startling coincidence, but the opinions, so expressed, have since been somewhat moderated. Studies in development and comparative anatomy have indicated the functions of the colon, which are (*a*) to absorb the water from the liquid contents of the bowel, not only to prevent too great loss of fluid from the system, which might be difficult to replace as quickly as needed, but also to

render them more solid and so remove the necessity for frequent defecation, thereby minimising the chance of capture, if pursued by a foe, (*b*) to prevent the loss to the system of all carbo-hydrates available in the ingested food. These carbo hydrates, now as we know, are necessary to neutralise the ketones in the blood, and prevent what is called acidosis. This view is borne out in modern medicine by the use of dextrose or glucose, instead of peptones as nutrient enemata and to combat aceto-nuria, in the therapeutics of diabetes.

All the ills that in 1902 were attributed to stasis and toxæmia in the large intestine, are now ascribed to stasis and toxæmia in the small intestine, for the question of a few hours delay in a tube, which can only absorb carbo hydrates and water, cannot possibly spell danger to the individual, the mere chance emptying the lowest ten inches of the lower bowel, can have no beneficial effect on the level of the toxæmia of that individual, unless this emptying is accompanied by a forward movement of the whole intestinal contents which, we know, apart from an active purgative, it is not.

The benefit felt by each individual on the emptying of the rectum is an organic sensation, conveyed through the autonomic system to the splanchnic area, contracting blood vessels and raising the blood pressure of the body generally, and imparting generally the feeling of "bien être."

We must note carefully that this applies only in cases where no actual obstruction is present, if there be obstruction, then, as the intestinal wall contracts, pain in the region of the umbilicus will be experienced, while the lymphatics of the wall and mesentery become engorged and soon reverse peristalsis occurs, as this travels upward it causes ileocecal and pyloric spasm and regurgitation, which are attended by such distressing symptoms as to make the medical attendant think that it is a separate entity that he is dealing with, *e.g.*, appendicitis is most commonly symptomatised, by acid eructations, which in a very large proportion of cases is diagnosed and treated as gastritis. The symptoms are severe, no matter how slight the obstruction is, if the site of the obstruction be in the small intestine, and hence to have a clear unimpeded effluent throughout the alimentary tract, there must not be the slightest hindrance to the effluent in any part of the small intestine. The practice by the Jogis of this country of the Jog known as "Antardhuti," or bowel washing with its resultant long life (100—200 years) is a striking corroboration of the ancient wisdom of the East.

Carell of New York has made recently the most exceptional discovery of modern times, which, when thoroughly understood, will revolutionise biochemical pathology. He has shown that animal tissue is immortal, provided it is properly fed, and properly drained. In man there is little difficulty about food supply, too much attention has been paid to the ingestion of suitable diets,—it is the efficient drainage or the prevention of stagnation of our drainage apparatus, that is all important.

Lane has all along insisted on the importance of neglecting end results, no matter how insistent the symptoms might be, and confining our dealings with the defective condition of the drainage of our intestines, the prime factor in the development of disease and death. Whether this can be effected sufficiently by increasing the supporting intra-abdominal pressure, by exercise, or by dieting, or by lubricants, or whether some operative treatment is required, will depend on the individual and the nature and extent of his stasis.

It is here that we make use of X-rays as a routine examination, and thus we are enabled to judge very accurately indeed the amount of stasis in each portion of the alimentary tract and to ascertain in most cases the nature of the obstruction, so that when we get patients coming to us with dyspepsia and "attacks of liver" and all other numerous imaginary complaints, it behoves us to

give a very guarded diagnosis, until we have had an opportunity of having them thoroughly examined by an expert, with a bismuth meal and a screen.

Lane then is in a very strong position regarding the factors producing the symptom complex of stasis. By operation he has relieved the mechanical obstruction that, before, he had maintained was the cause of the symptoms and in almost in every case, immediate improvement results, the physician and the biochemist have no such means at their disposal to so clearly demonstrate the truth of their beliefs.

Let us then examine the positions in which this obstruction to the effluent occurs. First, he lays stress on the first kink or obstruction, which forms even in very young infants, i.e., in the descending colon just where it crosses the pelvic brim, bands form on the outer side of the mesentery, which are, he maintains, not inflammatory in origin, but the result of crystallisation of lines of force developed in resistance to downward displacement, this appear before the erect attitude is assumed, and when the bands contract they fix the colon securely, then comes the erect attitude with the thickening of these bands, the sagging of the iliac and pelvic colons on either side, with the formation of a kink, this kink causes obstruction to the out flow, and all voluntary efforts at expulsion only result in an elongation of the pelvic colon, which "paddles" in the pelvic, and stasis in that individual has begun.

Tracing upwards the canal, he draws attention to the part played by the end of ileum, which is almost entirely responsible for such an imperfectly understood disease as chronic dyspepsia. The cæcum, loaded with fluid contents, tends in the erect attitude to glide downwards into the true pelvis, the hypertrophy of the muscular wall itself is insufficient to meet the excessive strain, it gradually dilates and descends from its normal position, this tendency to fall is opposed by two series of resistances which develop as bands or thickenings in the peritoneal covering,—one series is internally placed, while the other is external. The external group runs from the outer aspect of the cæcum to the peritoneum, lining the abdominal cavity, the lowest of these frequently involves the appendix and ties it down, if

internal to the cæcum and is an added strain to that portion of the mesentery which holds up the end of the ileum. In consequence of this traction a thickening forms on the under surface of the mesentery, and then contracts and then drags on the ileum at a point about 2 or 3 inches from its termination. This cicatrisation at first affects only the posterior layer of the mesentery, and can be felt rather than seen. Later on these thicken and not only anchor down the ileum, kinking it, but by twisting it, reduce its lumen still further (Fig. 4). You are all aware of the frequency of appendical operations in recent years, a frequency which has been difficult to justify for the appendix has in at least 50 per cent of cases been found to be healthy.

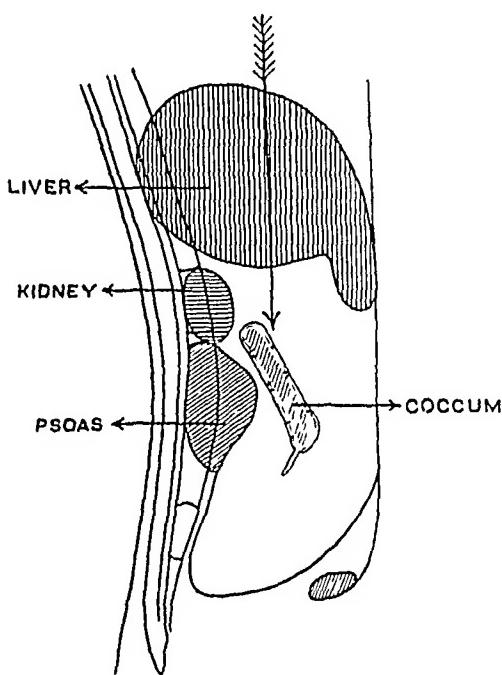
Trouble in the right iliac fossa, diagnosed at once as appendicitis may be appendicitis or may be mere ileal obstruction. Appendicitis 'per se' probably never occurs, cecal or ileal prolapse will certainly have been antecedent factors, its lumen will certainly have been occluded about its middle portion by a band constraining it, this may occur by one of the outer bands or by one of the inner group. If it occurs by one of the outer bands, Figs. (1) and (2), and appendicectomy be performed, the symptoms due to the appendical inflammation will be relieved, while those due to the ileal obstruction will still remain, as the ileal effluent is still obstructed by the inner set of bands—the inner limb of the parallelogram of forces (Fig. 3). If it occurs by one of the inner group (Fig. 5), the appendix will be found running up behind the end of the ileum and the appendical mesentery aiding in controlling the contents. Appendicectomy here divides the controlling bands and complete relief of the symptoms results. In the latter case often the appendix is found healthy, but the symptoms of pain and dyspepsia disappear entirely after operation. The surgeon had effected a remedy unwittingly. These constitute the group of cases said to be suffering from "appendicular dyspepsia".

In the former group non recognition of the ileal congestion and the ileal kink has been the cause of incompleteness of operation, with the result that pain and discomfort still continue after appendicectomy, the source of much disappointment to surgeon and patient (the appendix with its outer set of bands has been excised leaving the inner set still with their grasp on the ileum controlling its effluent). Appendicular colic we now know to be ileal colic, up to the point where the parietal peritoneum is still unaffected—the pain remains in the mid line of the body, as Mackenzie has indicated, the characteristic pain of a hollow viscus—here the only hollow viscus being the small intestine or ileum.

Mistakes were possible in the days of 2-inch or 3 inch incisions, but now it appears certain that if the mesentery be not thoroughly investigated through a very much larger opening, good and satisfactory results will not be obtained from the operation on the appendix.

The condition of ileal kinking and congestion ought to be looked for in every case of abdominal section, for much can be done by a stitch here and there to relieve kinking at any of the usual sites and so relieve obscure symptoms.

It is in this connection again that I would urge on you all in cases of proposed abdominal section the necessity for a thorough prior examination of the alimentary tract under bismuth and the X rays, so as to get a general picture of the whole tract and the approximate amount of stasis in each portion of the tract. In years past in the absence of such X ray examinations, any and every condition in the right iliac fossa has been attributed to the pathological changes in the upper iliac lymphoid tissue in a very large proportion of such cases the abdomen is opened, the appendix is found healthy, but the proximal end of the ileum is thick and boggy and dark in color, with very much the feeling of serge cloth, perhaps as large as two fingers in breadth, while the distal end of the ileum between the kink and the cæcum, is collapse



Lumbar convexity well marked Weight of viscera resting on psoas shelf (Colley)

it happens to be at its middle, the distal end is obstructed, the contents are retained, and appendicitis is apt to be the result. The internal group is the internal limb of the parallelogram of forces and lies

and pale. With all this we must remember that the passage of the contents from ileum to the cecum is not a simple process. Elliott, Heitz and Keith have shown the presence of a well marked and complicated sphincteric mechanism, just as exists at the pyloric orifice, with muscular fibres running up the ileum and extending some four inches from the valve itself. Whatever else be the effect of Lane's bands on controlling the effort in all cases where they are present, the ileocecal sphincter has been found to be firmly contracted, whether reflexly or not, it is difficult at present to say, but if so, then there will be a valvular as well as a mechanical obstruction to the effluent caused by the kink.

Then let us follow upwards the intestinal canal. The ileum becomes as we have seen congested, distended, and prolapsed. This involves later the jejunum, and a duodenojejunal kink is formed (Fig. 6)—this being the result of the overweighted congested intestine hanging down and falling from their two points of support, i.e., the left side of the 2nd lumbar vertebra,—and the termination of the mesentery in the right iliac fossa—causing the kinks at the duodenojejunal flexure and a point about 24 inches from the termination of the ileum. Then follows duodenal catarrh and distension, with the well marked tympanitic note along the right costal margin.

Then the stomach sharing the general ptosis of the intestines, due to being overloaded with injudicious food, is slung on its points of support, which are three-fold—

- (1) the oesophagus
- (2) the gastrohepatic omentum running to the lesser curvature
- (3) to the gastrohepatic omentum running to the junction of the first and second parts of the duodenum—a fixed point

Pyloric spasm results from the nervous mechanism of the pyloric sphincter preventing the acid chyme impinging on the congested duodenal mucous membrane. Pyloric spasm causes intense pain in its grip on the delicate nerves within the muscular coat and the result is subsequently dilatation of the stomach, with alteration in the chemical nature of the contents. Hyperacidity and the development of acetic and butyric acids, &c., are now established with engorgement and inflammation of the mucus membrane. These alterations in the chemical condition of the contents of the stomach (due to organisms and chemical changes) present the symptoms of gastric dyspepsia or gastritis, which have been treated more or less unsatisfactorily in the past, for up to now we have been taught to regard this alteration as the cause of the development of gastric ulcer, rather than gastric ulcer as an end result of stasis, as we shall show, for, if the stomach thus overweighted by dilatation continues to drag, the gastrohepatic omentum and the oesophagus alone oppose its downward movement. Bands will, especially if the liver itself be ptotic and give little support to the omentum, develop round the cardiac opening in the diaphragm, and will after a while contract and tend to kink the oesophagus at this opening, giving rise to the uncomfortable symptoms known as 'Cardiospasm,' so well described by Plumbe. Bands will also develop in the gastrohepatic omentum, which are the crystallization of lines of force, between the pylorus and the under surface of the liver in front of transverse fissure (these serving later to kink the pylorus). Fig. 6

The chief tening strain on the stomach supports when the stomach is distended, is along the lesser curvature, especially when the transverse colon is loaded. The strain on the gastrohepatic omentum will be along the crystallized lines of force which will act over a small area and not distributed among the whole area of the lesser curvature. This small area will be excessively pulled on and stretched and the mucous membrane of this small area inside the stomach wall will become blanched and anemic, the hyperacid contents acting on the area will cause ulceration to

occur. The position of the ulcer will depend on the position of greatest strain in the supporting omentum. In man, the stomach is more vertical and the greatest strain comes just proximally to the junction of the first and second parts of the duodenum and so in man duodenal ulcer is common, while in woman owing to the shape of her abdominal cavity, the stomach is more horizontal, and the strain will come along the lesser curvature somewhere, and hence in woman, gastric ulcer is most frequently found. Ulcer found elsewhere in the stomach is rare, and has seldom a history of dyspepsia, and is generally thrombotic in origin. In this connection, we recall that some very eminent men have ascribed gastric and duodenal ulcers to an antecedent infection of the appendix by organisms, because these were cured by appendectomy, but we have seen appendix may control the effluent, and if removed stasis will be diminished and gastric and duodenal ulceration will heal spontaneously.

Let us now consider what is happening in the second and third parts of the duodenum in the state of catarrh, and I consider the ampulla of Vater, with the openings upon it of the bile duct and pancreatic ducts.

If the bile duct opening be congested the bile will be dammed back, infection may take place, and choleystitis, gallstones, cirrhosis, and jaundice may readily result.

If the pancreatic ducts are blocked, then infection by organisms is easy, especially when their level has been raised by stasis and pancreatitis will result, and an efficient supply of the necessary ferment will not be forthcoming and profound disturbances will result, culminating in pancreatic dyspepsia or in diabetes of the pancreatic type. At a future date I shall hope to show you the direct causal connection between frequency of chronic intestinal stasis and the frequency of diabetes in India, especially among the middle classes.

The infection of the pancreatic and biliary ducts is a somewhat late event in stasis, it does not often take place in young people, but frequently in persons at or nearing middle life.

Chronic intestinal stasis then is secondary to a downward displacement of the movable positions of the intestinal tube, in relation to the fixed. So that stasis is secondary to ptosis. Until the genius of Lane brought forward an explanation, physicians attributed cures of gastric and duodenal ulcer to diet and rest in bed and treatment by drugs, &c. No doubt these had some effect in neutralizing secondary complication, but the primary factor of cure was not understood, i.e., the recumbent position, which is so valuable, in mechanically undoing kinks, relieving congestion, diminishing stasis and effecting a rapid cure. So too in those cases of severe auto intoxications, as hysteria, neurasthenia, etc., treatment by such methods as the Weir Mitchell method have effected wonders now, as we understand, by the benefits of the recumbent posture necessitated by rest in bed.

Let me remind you for a moment of the fixed points of the alimentary tract (1) the oesophagus, (2) from the junction of the 1st and 2nd part of the duodenum, marked by the vital structures limiting the foramen of the Winslow to the muscle of Treitz fixing the third part of the duodenum to the left side of the body of the second lumbar vertebra, (3) the termination of the mesentery over the right iliac fossa, (4) the ascending colon fixed from a point where the psoas muscle crosses diagonally from the spine to the iliac fossa up to a point covering the lower third of the right kidney, (5) the descending colon fixed by a firm ligament (the costocolic) and supported by the gastro splenic ligament, and thence being retro peritoneal is firmly fixed to the crossing of the psoas muscle as on the right side, when it again becomes movable, (6) the attachment to the pelvic wall just below the psoas muscle making the termination of the movable pelvic colon and commencement of the fixed rectum. Coffey in America investigated this relation between the fixed and movable portions of the intestine, with a view to determining the truth of the

assertion of Lane that the erect attitude was primarily responsible for ptosis and stasis, and he pointed out that the prime factor is an error in development in the fusion of the peritoneal layers surrounding the alimentary tube. The difference between the supports in the quadruped and the supports in man depends on a pre-natal fusion between peritoneal coverings and the parietal peritoneum with consequent obliteration of serous areas and fixation to the wall of the abdominal cavity. In the lower forms of life the alimentary canal is a straight tube and the capacity for variety of accomplishments is apparently dependent on versatility of requirements, calling for varieties of food. This necessitates a more complex alimentary canal in the higher forms of animal life.

The alimentary canal is hypoblast and is formed between two layers of mesoblast which form its peritoneal covering. The rotation of the alimentary canal to permanently occupy a definite position in the abdominal cavity occurs so as to allow it to hang from the spinal column, while in man the position is made permanent, as Huntington points out, by a process of pre-natal fusion or adhesion—thus the liver has fused with the diaphragm, while in quadrupeds it is suspended by a mesentery. In man the duodenum is firmly fixed, while in the quadruped it is movable. In man the ascending or descending colons are or should be firmly adherent to the posterior abdominal wall without a mesentery, while in quadrupeds the colons have a long mesentery with a wide range of movement. This fusion of the mesentery occurs with the parietal peritoneum pre-natally and ought to occur naturally in certain positions as we have just stated, but anatomists have called attention to the fact that one in five humans have incomplete fusions in one or more of their mesenteries, so that if it happens to be the cæcum (which is the commonest) it and the ascending colon will hang by a mesentery as in quadrupeds (Fig 1 C). It was this great proportion of movable cæcums that led Wilma, Klose, and others to regard "cæcum mobile" as the chief cause in intestinal stasis. But granted a movable cæcum then Lane's explanation of stasis and obstruction by bands would seem the most reasonable.

The close connection of movable kidney with a free colon is too much of a digression to do more than to remind you that movable kidney never occurs *per se*, either on the right side or on the left.

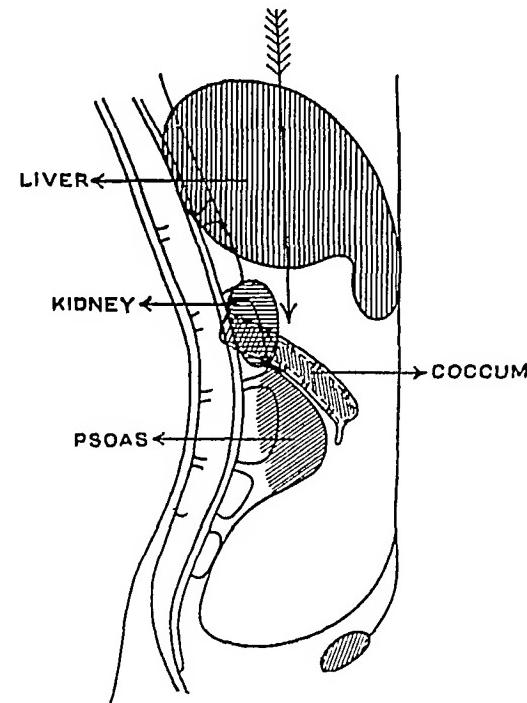
What has an important bearing on the question of abdominal ptosis is the shape of the normal abdominal cavity. Coffey has shown that it is devised to hold its contents with the least possible friction. The cavity is like an inverted mango, with the smaller end just above the base of the appendix, so that its long axis lies at an angle to the vertical. The smallness of the lower extremity is due to the lumbar convexity forwards of the spine, if this lumbar convexity be not well developed, the cavity becomes oval, owing to the lower pole being enclosed and the viscera have a tendency to fall. Thus again the developmental factor is most important. The normal narrowing of the cavity below is still further decreased by the psoas muscle which acts as a shelf running at an angle of about 50°. All the heavy organs rest on this shelf except the stomach and transverse colon, which are supported by only ligamentary ties and hence are the first to prolapse. Hence the importance of exercises to develop this muscle in cases where it is weak. In the normally shaped body two thirds of the right lobe of the liver is posterior to the vertical psoas line and hence there is no weight at all inside the cavity (Fig 7). It is important to note that the strength of the abdominal wall in front performs the greatest possible service in keeping the intestines and organs on the psoas shelf. Thus we may put down as the primary factors as devised by nature in upholding the abdominal viscera in the erect attitude, as

(1) pre-natal fusion of peritoneum with visceral mesenteries

(2) Adequate lumbar convexity of spine with efficient development of psoas muscle

(3) Integrity of rectus abdominus muscle and other muscle of the abdominal wall

If any of these are deficient either developmentally or in an acquired manner, ptosis in some degree will develop in the structures dependent on them. Once ptosis has begun, Lane's bands will be formed and subsequent stasis will be commenced. So in this



Lumbar convexity ill marked. Weight of viscera falls anterior to psoas shelf and subsequent ptosis.—(Coffey)

manner we may assume that Lane's first kink is primarily a non-fusion of the colic mesentery and the parietal peritoneum, and the child begins life with a movable colon. As long as it is quadruped and an infant, little harm will be done, on assuming the erect attitude, however, the disadvantage of movable organs come into play at once. Thus the stages in the process will be—deficient pre-natal fusion with subsequent sagging of certain movable portions over the fixed, with the development of Lane's bands, and the formation of kinks. Then will come stasis, auto intoxication and absorption of fat, with continued prolapse of all the viscera, until the main abdominal cavity is almost empty and the pelvis is crowded with abdominal organs, and as Coffey notes, the upper abdomen shrinks, as the organs have left it, and the lower ribs become slanting. The patient assumes a quite characteristic attitude—the convexity of the lumbar spine has gone—the shoulders leap back, the hips and spinal column are thrown forward to get the psoas muscle mass under the prolapsing heavy organs and the patient stands as if carrying another in his arms. In this condition surgery is impossible, our only resource will be to attempt to establish the deposition of fat once more, to increase the supporting intra-abdominal pressure and to buoy up the falling viscera—following the example of the relief of symptoms of stasis during pregnancy by the lifting power of the growing uterus.

So far I have had to deal superficially and inexhaustively with the mechanics of stasis, with a sketch of the effects on the alimentary tract caused by it, subsequent to ptosis. Now let us look to the systemic toxæmia, caused by the retained contents of the tract and its effect on the body tissues generally. I want to carefully exclude cancer from the scope of this evening's discussion. But I believe not many years will elapse before cancerous growth is proved to be only possible in tissues bathed in a fluid rich in intestinal toxins derived from a stagnant body drain pipe.

Lane treats by ileosigmoidostomy or "short circuiting" with some strikingly remarkable results. The mechanical obstruction to the flow of the contents of the intestine being thus removed, a change at once occurs in the level of the toxæmia of the patient and improvement at once commences in the symptom, and within 24 hours the majority of the patients will, notwithstanding the shock of the operation, volunteer the remark—"I feel so different."

Further, what is a direct inference from these observations is most important, i.e., that by the establishment of toxæmia from stasis, the resistance of the body to the entrance of bacilli is lowered and infection of the blood stream at any selective site is rendered possible.

It is almost certain that in the absence of any form of auto intoxication, no infection of the body can take place, and hence in severe infections the cure must be directed first to the cure of the stasis, and the body protective mechanisms, freed of their intoxication, will do the rest. In the most severe cases the stasis will have been so prolonged and so profound that medical means are of little avail and radical methods of treatment by ileosigmoidostomy are necessary. The results in the hands of Sir Arbuthnot Lane were really remarkable. Among such cases as I saw during my year's work in this clinic, I have seen cases of advanced tuberculosis of both lungs and joints, —rheumatoid arthritis (the bone of most people over 50), infections of genito urinary tract—cystitis, pyelitis—endometritis and Still's disease—Infection of the colon itself causing mucus and ulcerative colitis and ulcerative endocarditis.

The details of the operation are simple in the extreme.—The ileum is cut across on the proximal side of the kink. The distal end is sutured and curved sub peritoneally. The proximal end is then carried across and inserted end to side into the pelvic colon. The first kink mentioned above is exaggerated by a stitch to prevent regurgitation up to the ascending colon. The peritoneal interval is carefully closed from below upwards. The large intestine may be left or removed according to the condition of the patient. It seldom gives trouble, and if it does it can always be removed without difficulty at a subsequent operation. The mortality from the operation itself in Lane's clinic is practically nil. In four years, Martha ward at Guy's hospital shows 4 deaths in 100 cases, 54 of which were ileosigmoidostomy and 52 colectomy.

Adhesions, however, are apt to form, which, as you know, are the bugbear of abdominal surgery. Most of us are content to restrict the operation to cases where all other means have failed in making life worth living, or in such cases where infection of the body is so profound that the drain-pipe cannot be otherwise properly flushed. To us, who have had the privilege of witnessing daily for upward of one year the beneficial results of short circuiting, the only determining factor in being short circuited ourselves is the possibility of the formation of adhesions, and doubtless when this possibility will be overcome, then the difficulty will be to find an adequate number of surgeons ready to perform the operation on willing patients. It is almost certain that gastrojejunostomy (anterior and posterior), is now an operation of the past, except in cases where cicatization or tumor growth has resulted in a considerable reduction in the size of the lumen of the bowel. A simple ileocolostomy results in complete rapid cure of duodenal ulcer, as the duodenal congestion rapidly subsides spontaneous cure results.

In gastric ulcer in ileocolostomy is all that is needed. In certain cases of gastric dilatation a posterior gastroenterostomy is done, in order to relieve this strain on the lesser curvature of the stomach by draining the organ more rapidly. The cases of stasis may be divided up as Bunbridge suggests into various types demanding appropriate treatment. First type, where no operation practically can avail, second type, where removal of the colon with short circuiting is necessary, third type, short circuiting alone, fourth type, adherent bands

divided and sutured with subsequent use of a belt, etc., fifth, misplaced appendix hanging up the ileal loop, sixth type, mild case which may be treated by medical measures alone. The medical measures at hand are numerous and when the problem of the mechanics of stasis has been understood, they are quite successful in the case of early trouble.

Dietetic measures—We may limit the quantity of each meal, so as to decrease the weight of the organs while in process of digestion and limit the quality to such articles of food as will not prove a suitable "nidus" for the growth of such "bacteria" as we suspect. The careful fattening of our patients is essential for rapid recovery, so that intra-abdominal pressure may be maintained and any ptotic viscera may be buoyed up and any kinks straightened.

Medicinal measures—We shall still have to mitigate the sufferings of our patients by treating the end results, i.e., the hyperacidity of the stomach and the pyloric spasm by Bismuth, Atropine, &c., as before.

The use of liquid paraffin before each meal is very efficacious indeed. It precedes the food in the canal and facilitates the effluent.

Hygienic and General measures—Rest in bed we have seen is essential, especially in the commencement of the treatment. This continued for 10 days has a marked beneficial effect, and without any drug medication whatever, would be sufficient in the majority of cases to effect a cure.

The exercises are necessary to improve the lumbar convexity of the spine and the development of the psoas muscle and specially exercises to increase the power of contraction and retraction of the rectus abdominus and other muscles of the abdominal wall. These muscles we have seen play a very great part in preventing downward displacement of viscera and subsequent stasis.

In association with paraffin, a spring belt worn over the lower abdomen is of the greatest benefit, acting much as a truss. It is specially useful when the abdominal wall has been allowed to become flaccid, as women, who, after delivery get out of bed early, find their muscles stretched and out of tone.

If the condition of our patient is that of a human derelict we are not justified in temporising, but we ought to have recourse to surgical procedure without delay.

Finally it is curious to note that the history of all peoples of the earth, whether Aryans, Mongols, or Tatars, etc., relates that their earliest ancestors lived 900—1,000 years. This now we can understand to have been perfectly possible. Man had been a quadruped. He had only just assumed the erect attitude. Ptosis and stasis were as yet unknown. Toxæmia and auto-intoxication and infection were not dreamed of. Long life was the order of the day, and gradually ptosis occurred and with ptosis stasis. With stasis came the opening of "Pandora's" box, or in other words all the evils to which man is heir to, the result—Infection made possible by stasis.

I mention three cases out of some 60 that I have seen operated on by Sir A. Lane as fairly typical.

Cases—(1) Mrs. B, aged 39. History of constipation—Spent 6 years in hospitals for gastritis, dyspepsia, &c. Had appendectomy done in May, 1911. History of colicky pain continuing from January 1911 to 1912, and sleeplessness and headache. Abdomen opened in November, 1912. Well marked ileal kink still present. Cecum mobile. Patient was short circuited, and has now (January, 1914) no constipation. No abdominal discomfort and can walk and ride without any fatigue whatever. Skin of face resembles a girl of 17.

(2) P. L., aged 22, had constipation, flatulence and hyperacidity for 8 years. Mental depression, neurasthenia, severe colicky pain and distension of abdomen. X-ray showed delay in stomach and 81 hours stasis in the colon. Abdomen opened by Sir A. Lane in 1912. tubercular glands were found. Duodenojejunal and ileal kinks well marked. Short circuiting was done and in

14 days the mass in the abdomen disappeared and patient is now, December 1913, in perfect health and doing his ordinary work

3 M H, woman, unmarried, aged 28 Had pain and swelling in all the joints since 12 years old Had choleric attacks at 6 years and at 17 Typhoid fever at 19 In September, 1912, she had endometritic symptoms, and the uterus was cuetted and the urine showing staphylococci A specific vaccine was injected She subsequently experienced abdominal pain and vomiting, with discolouration of skin, &c, and all the signs of systemic toxæmia. She presented the sallow dirty complexion, dirty tongue, the evil smelling breath, the doughy abdomen and colic pain Cold extremities, and physical and mental depression The finger joints were stiff and the knees and elbows, &c, were affected X-ray examination showed stasis of 104 hours' duration Abdomen opened by Sir A. Lane, 13th January, 1913. A well marked ileal kink—short circuiting was performed. Regurgitation subsequently occurred and colectomy was performed on 12th May, 1913 Within 24 hours the joints of the fingers could be moved and the patient is now, December, 1913, able to sew and earn her living She is putting on weight and has no pain anywhere

Cases shewn M M B—, aged 24 History of 7 years dyspepsia, hyperacidity, and colic and constipation Marked tenderness in right ileac fossa. Pallor of complexion Inability to keep his mind on his work. Sleeplessness, dyspnoea Had two attacks of gastric ulcer January 15, vomited blood and all the signs and symptoms of gastric ulcer open to physical examination were present Rest in bed and liquid paraffin alone have made him practically sound in 14 days, and healed his ulcer and he is now beginning to put on weight and with the use of the spring belt and daily use of paraffin he may, if fat be largely deposited intra abdominally, escape a recurrence of ulceration, as stasis will then be relieved. If ulceration does recur, then I would recommend short circuiting, the quickest and speediest method of removing the danger to life

5 A C D—, aged 31 History of constipation and dyspepsia since 1902 Jaundice in 1904, operated in Calcutta for gallstones in 1911 None were found Biliary fistula formed which still continues Patient has colicky pain in abdomen, intensely jaundiced, with a mass in the right ileac fossa, obviously the enlarged and engorged ileum just on the proximal site of the kink The case died before any kind of remedy could be suggested Here I suggest that this was a case of choleo-cystitis, the result of duodenal catarrh from ileal kink and stasis The end result of choleo cystitis was mistaken for the primary factor and operation was performed in the gall bladder instead of the ileo caecal region

honour being asked to address you For a meeting such as this denoting, as it does, a wide combination throughout the Eastern Empire to promote what is best in European medicine—an art inspired by sympathy for human suffering and whose welfare depends upon general peace and order—is indeed an augury of good omen, towards the success of which all of us, who wish well to our Eastern companions and friends, must indeed feel it an honour to be able to help, even though the help should be such a small thing as an address

I am afraid that the title of my address as set down in your Agenda paper is scarcely lucid My excuse is, that when asked by your local Secretary the nature of my discourse, I did not understand that I was providing an exact title, and I merely meant to indicate to him the main idea of the theme which I hope to put before you Sitting down a short time afterwards to put my thoughts in order, I realised that for the present audience my subject would have to have a wider cast of thought than I had at first intended For very much I should like to say upon the relationship between the pathological laboratory and the clinical wards would be imbued deeply with a purely local spirit, and though I think that there is plenty of scope for a local exhortation, and that much good might ensue thereby, yet at the same time I realise that such is the business of a local audience only, not of the wide and representative gathering which you compose Therefore, trusting to your grace, and looking to the importance of your meeting for my excuse, I intend to go beyond the boundaries of my title, and to address you upon the "relationship between laboratory and clinical work"

In scientific, in contrast to political, discussions it is a profitable custom to define the "terms" under consideration. However, I hope that here minute definition is unnecessary I am addressing an audience of practical men who are actively concerned every day in both laboratory and clinical work probably we are in agreement in regarding that professional work as clinical which consists in bedside observations, and that as laboratory, which can be, and generally is, carried out at a distance from the bedside of our patients But although most of us recognize clearly that there is considerable distinction between the two classes of work, yet in the practice of our profession we differ greatly in the degree of the distinction which we make. With some of us—would that I could say the majority—clinical and laboratory work diverge the one from the other so gradually, that though at the two extremes there is no difficulty in detecting the difference between them, yet for many observations, the step from the bedside to the laboratory is a pace so short that our continuity of thought remains unbroken, and the difference in the work, if it does exist, passes unnoticed

It is the knowledge of the value of this continuity of thought between the sick room and the laboratory, and the earnest desire that it should be customary, not rare in practice, that has brought me before you this evening. For so far as my own experience goes—probably that is not very far—there is no impediment to the proper application of European medical knowledge so great as the wide separation which too often occurs between these closely related spheres of work

Unfortunately it is true that now a days some separation is inevitable For in work of all kinds, as the methods necessary for its efficient performance become complex, the need for specialisation arises Almost from the earliest times medicine has felt this need, and as its progress continues the need becomes more and more pressing

Laboratory specialisation is one of the youngest of a large family, but, though so young, its growth has been such as to leave many of its elder sisters far behind The reason for such phenomenal growth is not far to seek The present age is sometimes called the age of

THE RELATIONSHIP BETWEEN LABORATORY AND CLINICAL WORK *

BY A WHITMORE, M.D.,

CAPT., I.M.S.,

Rangoon

GENTLEMEN, to open an address such as this with an expression of the honour which the speaker feels has been thrust upon him is, I know, so usual as to be almost trite, but I hope that the importance of the occasion may be my earnest that I speak both heartily and truly when I say, that I feel it a great and pleasant

* An address delivered before the Annual Meeting of the All-India Sub Assistant Surgeons' Association, held at Rangoon, December, 1913

science, for its great achievements have resulted in the main from a steady application to practical life of exact observations. Medicine has shared largely in the universal progress of the age, and in medicine, as in other affairs, progress has been due to this use of exact methods. The recognition of the vast importance of exact observations has led to special provision for their production, in the shape of laboratories.

Now laboratory methods are often complex and usually exact—at least I hope so, but in order to carry out complex, exact observations constant practice is necessary, and perhaps it is true that only an abnormal type of mind—(slightly deranged)—can take a lasting pleasure in this mental work, however that may be, it is certainly necessary that the observers should be special, for the mental processes demanded are many, the mind must act swiftly and easily, and for this, mental concentration is indispensable. Moreover, in addition to special observers, special instruments must be provided. These instruments are often such that for their proper use familiarity, as well as knowledge, is required, by constant use alone can familiarity be acquired, further special instruments are sometimes very special in their cost, so that much multiplication is impossible. Also laboratory investigations are frequently lengthy, and for the sake of time alone it may be necessary to refer them to a chosen few, leisured, persons.

Thus the need for specialisation appears obvious, and specialisation means separation, yet when the results of the special work are by themselves quite incomplete, being but part of a whole broadly homogeneous, a wide separation between the specialisation and the whole, of which it is a part, is a misfortune so evident that I would not labour the point, were it not that it is so constantly neglected. Indeed, so far as I am conversant with the progress of medicine in the East, the intimate connection between clinical bedside methods and laboratory specialisation has received but scant recognition. Doubtless for this neglect there are many reasons, first and not least, financial difficulties have intervened. While the necessity for the laboratory work has been granted, it has been thought economically sound, and practically satisfactory, to endeavour at one stroke to obtain the most striking results of pure research, and at the same time to meet the less conspicuous but very necessary daily demands of clinical medicine. Thus the so called "research" laboratories have been founded, too often, alas! far from the large hospitals, in isolated grandeur amid the pleasant places of the high hills to the primary duty of pure research have been added duties more directly and immediately concerned with the sick to whom the workers have no direct access. This means separation indeed between laboratory and clinic. It is undeniable that in Tropical Medicine the comparatively recent great progress along the lines of Parasitology has given some countenance to this wide separation, so far as it has had this effect of diverting the Science from the Art of Medicine, I venture to assert that this progress has done great harm, I am glad to say that there are signs that we are becoming alive to this harm. You are aware that it has recently been decided to build the Pasteur Institute for Burma, our Cathedral of Medical Science, down in Rangoon—close to this hospital, the chief centre of medical practice, while still more hopeful is the proposal to establish a well endowed Institute of Tropical Medicine in Calcutta. Surely we may hope that Science is at last descending from her barren hills to inhabited places.

Unfortunately, however, the mere fact of being near neighbours, though it favours, does not by itself ensure that continuity of thought between the Art of Medicine and its Science, which is so to be desired. Here we have succeeded in establishing in a modest way a laboratory in the very closest contact with the hospital wards, and yet we, who work in the laboratory, could, and we would, a sad tale unfold of the wide gulf

which lies between ourselves and the ward workers. Need I say, that I hold that this gulf has not been fixed by us, in fact, so far as our limited resources allow we have bridged it by some narrow fragile bridges, but by these few pass other than ourselves.

I repeat that proximity by itself will not lead to a satisfactory interchange of thought, for that it is above all things necessary that there should be a widespread recognition of the disastrous effects of a policy of "water-tight" compartments in medical work.

Surely it needs but little imagination to perceive that for clinical work a wide separation is often disastrous, always regrettable, for laboratory work I can myself assure you that it is most depressing and quite frequently misleading. In clinical medicine without that accuracy of diagnosis which now-a-days is impossible without frequent laboratory assistance, to what a pass are you reduced?

True it is that for the practice of medicine there is much which we must learn which Science in a limited sense will never teach us. We have, and always will have, need of both Science and Art in medical practice, they are not antagonistic principles, but are mutually helpful, there is room, enough and to spare, for the free and energetic use of both, it is ignorance alone which sees them hostile, folly indeed which seeks their division. Yet all of us who are actively at work cannot help but be alive to the fact that there are limitations in clinical medicine beyond which our pathological deductions will not take us, we must in fact rely upon a provisional empiricism, when an exact scientific basis is wanting. But if, cut off from laboratory aid, you are not uneasy and dissatisfied, but contentedly practice a so called Western medicine, then you are contented with the husk, not the grain, of Western medicine, for you practice an empirical medicine only. Upon the whole it is just as empirical to diagnose a fever malaria, and treat the patient with quinine, without a blood examination, as it is to diagnose a general malaise "Congestion of the Liver," and give Ammonium Chloride. In both cases your exact scientific basis is wanting, and in the absence of such basis your mistakes will be numerous, and often costly to your patients—even should they happily prove lucrative to yourselves. It is with your contentment that I quarrel, for with a contented empiricism widespread it is idle to look for progress.

Unfortunately empirical methods are the easier, our patients are so sadly ignorant, that an appearance of wisdom adorning a kindly nature, and helped by an attentive manner, goes far to capture their admiration, and to retain their trust. Therefore, unless the standard of public education be an extraordinarily high one, it is idle to deny but that scientific methods are quite unnecessary in order to earn a livelihood empirical methods can, and do, satisfy our patients, fully, indeed, I believe that they understand and appreciate these better and that not infrequently scientific, rational, methods entail financial loss. But after all, we practice a profession, not a trade, and of nothing am I more certain than of this, that from the moment when we cease to search for a scientific basis upon which to found our daily practice, we enter upon professional senescence, and rapid indeed is our decline into professional dotage. It is not for the increase of your income, but for the longevity of your professional youth, the preservation of your mental vigour and elasticity, that I would have you in your clinical medicine seek close contact with laboratory work.

And of Laboratory work what if this be carried on apart from the criticism of clinical experience? Is the outlook much better than that of clinical work unaided by the laboratory? I believe not. I agree that prolonged investigations are better pursued away from the many daily distractions of clinical medicine, so far as clinical material is needed for such work, it is best provided at the time, and in the shape desired, by

means of animal experiment. Yet even laboratories devoted to such set problems require from time to time other thoughts directed and enlivened by being in indirect, though frequent, touch with the varied problems with which clinical practice abounds (I shall outline later how this indirect but close association might be secured.)

However, complex prolonged investigations are not required to satisfy the daily recurring needs of practical medicine, these frequent demands require but simple work and that along well known lines. To set apart laboratories for complex investigations, and then to call upon these same laboratories to deal with the constant distractions of ordinary routine demands, is probably most hampering to those engaged in difficult work, and certainly unsatisfactory to clinical medicine. For the laboratories set apart, properly so—for particular work—necessarily debarred from direct association with the actual practice of medicine—cannot be greatly interested in work which is for them subsidiary to their main purpose, and probably considered dull, irritating, routine, the results of which can be of but little import to the worker, for the material to be examined is collected by strangers from far distant patients, and the laboratory results, distributed far and wide, can be checked but rarely, and then but ill.

Surely, gentlemen, there can be no doubt but that this reliance upon distant laboratories is but a sorry makeshift. Yet how common it is! How difficult it seems to drive out the idea that in laboratory work the personal factor is eliminated, that to ensure and to foster the lively interest, the enthusiastic co-operation of the laboratory workers matters not at all, these workers are mechanics surprising in their accuracy and skill, necessary, for the machine-like with which they work is delicate, a bother to the busy clinician, but still mechanics of a baser sort, perchance unworthy of more than a mechanic's wage.

By all means have a few laboratories, kept apart in the peace and quietness so helpful to the solving of difficult problems, but do not harass them with work in which they can find no satisfaction, work which must be to them but lifeless routine. That work which for its life and interest demands an intermingling with clinical observations must be carried out in the closest association with clinical workers.

Therefore you must agree that a wide separation, the separation that is so common in the East, is deplorable, and disastrous to the best interests of both clinical and laboratory work, so that it behoves us to consider by what means the separation, which in some degree is necessary, can be limited, and its progress checked. It seems to me that these means are not far to seek. In the first place, so far as financial straits will permit, all difficulties of co-operation depending upon mere distance should be avoided. Laboratories designed to meet the daily simple needs of clinical work should be within the structural unit of all large hospitals, a simple laboratory is just as much an integral, necessary, part of a modern hospital as an operation theatre. You may—I hope that you do—think that this is a fact so obvious as to need no urging, I can only say that my experience has taught me that however unquestioned the theoretic acceptance of this principle may be, there is need, great need, to urge its energetic practical recognition. As I have said before, you can see to day for yourselves a very excellent, and I hope efficient, example of its practical recognition so far as this hospital is concerned. But although we have avoided all difficulty of co-operation arising from environment—we have our mortuary, laboratory, and small museum under one roof, one management, and within a stone's throw of the clinical wards—yet we have not escaped a very practical separation, one dependent not upon factors of space, but upon the diversities of personal interests. This brings me to the second essential factor in active co-operation, the personal factor.

For the proper co-operation between laboratory and sick-room an active, mutual, sympathy between the respective workers is very necessary at present, I submit, that this sympathy is extraordinarily one-sided.

It is not difficult to suggest the main reason, it is that the majority of men engaged in clinical work are to begin with ill-trained in laboratory methods, and later become more and more out of touch with the laboratory and its ways. To my mind it is as sterilising for a modern physician to be out of touch with the laboratory and its adjunct, the mortuary, as it would be for a surgeon to be out of touch with the operation room, and though it is bad for the surgeon also to lose touch with the laboratory and mortuary, even though the latter be a place of mortification for himself as well as for his patient, yet at any rate the surgeon does through his operation room experience keep in close touch with reality, and receives there, be he, as indeed he may be, even as truthful a man as an enthusiastic follower of Izaak Walton, a frequent check to a too exuberant imagination, but the physician, self-barred from the mental tonic of laboratory and mortuary criticism, is lost indeed, his professional soul, unwarmed by the invigorating rays of exact diagnosis, grows mouldy, living as it does in the gloomy shades of empiricism. Little wonder that at times, becoming fearful and afraid, he winds his way to the pathologist as to a wizard, for a diagnosis. It is but natural that he should fail to realise that his request is immoral; that it is one which he has no right to prefer, or the pathologist to grant. It is the duty of the clinician to ask the pathologist for information, for certain facts which he cannot otherwise ascertain, but these facts once given, the responsibility of the pathologist is ended, and the proper application of these facts is the business of the clinician, not of the pathologist. Therefore, unless the former has a good working knowledge of pathological methods he is apt to go astray both in his reliance upon, and his practical use of, the facts furnished him from the laboratory. For these errors he contentedly and honestly calls upon the laboratory to bear the blame.

If the close co-operation between clinician and pathologist which is as necessary for their respective labours, is to be obtained, it is absolutely necessary that the clinician should have a thorough initial training in the broad principles at least of laboratory work and thought, and that from time to time through his working life he should take the trouble to bring himself into real touch with pathological or laboratory progress. For this post-graduate halts are necessary. In Europe facilities for such pauses in the daily task are becoming usual, but is it so for you in the East?

But further, in order to maintain active, living, bonds of sympathy and union between bedside and laboratory work, it is necessary that the work itself should overlap or intermingle. It is a mistake that all pathological work should be referred to a special department. As pathological methods gradually mature many of them become so secure, and so simple, that there is no longer complexity in their details, the work can be accomplished easily and satisfactorily by anyone with a fair initial grounding in broad principles, when that is so, it is desirable that the work itself should pass from the special department of the laboratory into the more general field of the wards, it should be no longer laboratory, but bedside clinical work. As illustration of what I mean, I would suggest that the work of examining the blood of fever patients for the malarial parasite, the stools of dysenteric patients for amoeba, the sputum of the tuberculous for the tubercle bacillus, is now so simple, the necessary apparatus so uniform, that it should no longer be laboratory but bedside routine. I do not know of any physician, who in his rounds takes with him as a matter of course his microscope, and a box of simple stains, but I do most hopefully anticipate the day when these shall be as

familiar accompaniments of the physician as his stethoscope and thermometer now are, true, they cannot be be carried in his topee, or in his waistcoat pocket, but they are neither so bulky, nor so unsightly, as much that his colleague the Surgeon takes upon a journey

When such simple investigations as these become regular bedside observations, there will be but a short step indeed between laboratory and ward, the clinical worker will be in constant touch with exact methods, his daily object will be exact diagnosis, understanding of and sympathy with the more specialised worker, the pathologist, will be common and natural, not rare, and acquired. Whenever, from time to time, the simple methods fail, the clinician will, without doubt or hesitation, be anxious to avail himself of the more complex methods as yet available to the specialist only. He will appeal for laboratory aid with understanding, and with the preliminary simple examination already carried out Clinician and pathologist will each be daily practising similar methods, and exercising similar trains of thought, each fully cognisant of the other's doubt and difficulties they will no longer feel separate workers in different fields, but will know themselves for fellow workers in a common field of knowledge, even though they be in different corners thereof. Thus the clinical laboratory will be a real part of, not a separate adjunct to, the clinical wards

The clinical laboratory being thus closely linked with the wards on one side, it is not a far cry to the further field of work, the more secluded, more specialised laboratory of pure research. Of course, both wards and clinical laboratories are places of research, but it is not usual so to dignify them. We have seen that for complicated research a certain amount of exclusion from daily worry is essential, and in order to ensure this, it is not unnatural that a fair separation by means of special locality should be encouraged. But if these "research" laboratories are expected to interest themselves in the problems of medical work, they should have a very real and practical link with clinical work, such a link can be provided naturally by the clinical laboratories whose daily work intermingles with clinical observation. It seems to me that the best way to secure this close association between the two types of laboratories is to provide facilities and encouragement for occasional interchange of workers.

I do not think that in addressing the audience present before me, it is necessary to more than mention this, it does not, I am afraid, actively concern you, and I allude to it only in order to complete my ideal. I assume that your practical interest in laboratories is in the clinical laboratory alone, the strength and utility of which are largely within your hands. In connection with the more specialised laboratory for research, I would only point out that its stimulus, and fertile vitality, should come from its close association with its near relation the clinical laboratory, if this be weak and atrophied from neglect and misuse, the activity of its noble and honoured relative is sadly curtailed, and its usefulness much diminished.

I dare say that I have bored you with this discursive address, but, gentlemen, I care not—consider the importance of laboratory work in all branches of your profession.

Without laboratory aid, in medicine you are but groping empirics, in surgery but skilful mechanics, in preventive medicine blunderers without a guide, and for general progress you hope in vain. The soul of your Profession dwells within the laboratory, and it is upon the intelligence with which you practice your daily clinical work that this soul depends for its healthy nutriment.

You are assembled to day in a hospital magnificent in brick and mortar, in tiles and marble, some of us hope that in years to come this hospital of ours may be magnificent in things less palpable, but much more valuable, in medical and surgical work bold, imagined, and soundly performed. Should this hope be fulfilled, I venture to

prophecy, that in that future day a speaker addressing some such assembly as this, after praising all and sundry, will dwell with special, lingering, fondness upon the part played by the clinical pathological laboratory. And, as I say, it is upon your right understanding, and loyal intelligent support, that the work of the clinical laboratory depends. You yourselves know full well that in your hands lie most of the practical details of medicine as practised in this land, you may sometimes think that you are but hewers of wood and carriers of water, and that but little honour comes your way, yet we are all fellow workers at the same building, whose noble proportions are the design, neither of this country nor of that, but of all lands, whose progress depends not so much upon the designers as upon you the workers. Let your co-operation be for worthy ends, that you may be enabled to carry on your work with understanding, and to be bold in the use of your intelligence, then you may rest assured that, by your present honour what it may, the beneficent nature of the building which you are helping to complete, will be a glorious memorial to your unselfish devotion and honest zeal.

SCLERO CORNEAL TREPHINING FOR STAPHYLOMA OF THE CORNEA—17 CASES

By C H REINHOLD, F R C S (Ed),

CAPTAIN, I M S,

Civil Surgeon, Bijnor, U P

THE application of Elliot's operation to staphyloma of the cornea, though recommended by Lieut-Col Elliot on pages 36 and 37 of his book on sclero-corneal trephining, has not yet, I believe, led to the publication of any cases. During 1913 I operated on 17 eyes for this condition, and the results appear to me to be sufficiently encouraging to merit publication.

The cases were not selected, my object being first to satisfy myself that reduction of a staphyloma could be effected by establishing free filtration between the aqueous, in the anterior chamber, and the subconjunctival tissue, and this occurred very satisfactorily in 13 of the 17 cases.

In the majority of these cases no improvement in vision was expected or occurred, as the staphyloma was complete, but all the patients, with one exception, expressed themselves as very pleased with the result, and were at any rate relieved of an ugly deformity.

It is admitted that this operation will have little scope in Europe or America, but in conservative India, where the majority of our patients prefer to retain an unsightly and sightless eye, rather than have it enucleated, it should undoubtedly prove useful, for its cosmetic effect. In selected cases where there is some clear cornea in front of the pupillary area, in recent cases, where the cornea is still yielding, and in cases of conical cornea much benefit should result to vision, from this operation. Filtration having been established, the pressure of the closed lids on the front of the globe effectively splints the

means of animal experiment. Yet even laboratories devoted to such set problems require from time to time their thoughts directed and enlivened by being in indirect, though frequent, touch with the varied problems with which clinical practice abounds (I shall outline later how this indirect but close association might be secured.)

However, complex prolonged investigations are not required to satisfy the daily recurring needs of practical medicine, these frequent demands require but simple work and that along well known lines. To set apart laboratories for complex investigations, and then to call upon these same laboratories to deal with the constant distractions of ordinary routine demands, is probably most hampering to those engaged in difficult work, and certainly unsatisfactory to clinical medicine. For the laboratories set apart, properly so—for particular work—necessarily debarred from direct association with the actual practice of medicine—cannot be greatly interested in work which is for them subsidiary to their main purpose, and probably considered dull, irritating, routine, the results of which can be of but little import to the worker, for the material to be examined is collected by strangers from far distant patients, and the laboratory results, distributed far and wide, can be checked but rarely, and then but ill.

Surely, gentlemen, there can be no doubt but that this reliance upon distant laboratories is but a sorry makeshift. Yet how common it is? How difficult it seems to drive out the idea that in laboratory work the personal factor is eliminated, that to ensure and to foster the lively interest, the enthusiastic co-operation of the laboratory workers matters not at all, these workers are mechanics surprising in their accuracy and skill, necessary, for the machinery with which they work is delicate, a bother to the busy clinician, but still mechanics of a baser sort, perchance unworthy of more than a mechanic's wage.

By all means have a few laboratories, kept apart in the peace and quietness so helpful to the solving of difficult problems, but do not harass them with work in which they can find no satisfaction, work which must be to them but lifeless routine. That work which for its life and interest demands an intermingling with clinical observations must be carried out in the closest association with clinical workers.

Therefore you must agree that a wide separation, the separation that is so common in the East, is deplorable, and disastrous to the best interests of both clinical and laboratory work, so that it behoves us to consider by what means the separation, which in some degree is necessary, can be limited, and its progress checked. It seems to me that these means are not far to seek. In the first place, so far as financial straits will permit, all difficulties of co-operation depending upon mere distance should be avoided. Laboratories designed to meet the daily simple needs of clinical work should be within the structural unit of all large hospitals, a simple laboratory is just as much an integral, necessary, part of a modern hospital as an operation theatre. You may—I hope that you do—think that this is a fact so obvious as to need no urging, I can only say that my experience has taught me that however unquestioned the theoretic acceptance of this principle may be, there is need, great need, to urge its energetic practical recognition. As I have said before, you can see to day for yourselves a very excellent, and I hope efficient, example of its practical recognition so far as this hospital is concerned. But although we have avoided all difficulty of co-operation arising from environment—we have our mortuary, laboratory, and small museum under one roof, one management, and within a stone's throw of the clinical wards—yet we have not escaped a very practical separation, one dependent not upon factors of space, but upon the diversities of personal interests. This brings me to the second essential factor in active co-operation, the personal factor.

For the proper co-operation between laboratory and sick-room an active, mutual, sympathy between the respective workers is very necessary at present, I submit, that this sympathy is extraordinarily one-sided.

It is not difficult to suggest the main reason, it is that the majority of men engaged in clinical work are to begin with ill-trained in laboratory methods, and later become more and more out of touch with the laboratory and its ways. To my mind it is as sterilising for a modern physician to be out of touch with the laboratory and its adjunct, the mortuary, as it would be for a surgeon to be out of touch with the operation room, and though it is bad for the surgeon also to lose touch with the laboratory and mortuary, even though the latter be a place of mortification for himself as well as for his patient, yet at any rate the surgeon does through his operation room experience keep in close touch with reality, and receives there, be he, as indeed he may be, even as truthful a man as an enthusiastic follower of Izak Walton, a frequent check to a too exuberant imagination, but the physician, self-barred from the mental tonic of laboratory and mortuary criticism, is lost indeed, his professional soul, unwarmed by the invigorating rays of exact diagnosis, grows mouldy, living as it does in the gloomy shades of empiricism. Little wonder that at times, becoming fearful and afraid, he winds his way to the pathologist as to a wizard, for a diagnosis. It is but natural that he should fail to realise that his request is immoral; that it is one which he has no right to prefer, or the pathologist to grant. It is the duty of the clinician to ask the pathologist for information, for certain facts which he cannot otherwise ascertain, but these facts once given, the responsibility of the pathologist is ended, and the proper application of these facts is the business of the clinician, not of the pathologist. Therefore unless the former has a good working knowledge of pathological methods he is apt to go astray both in his reliance upon, and his practical use of, the facts furnished him from the laboratory. For these errors he contentedly and honestly calls upon the laboratory to bear the blame.

If the close co-operation between clinician and pathologist which is as necessary for their respective labours, is to be obtained, it is absolutely necessary that the clinician should have a thorough initial training in the broad principles at least of laboratory work and thought, and that from time to time through his working life he should take the trouble to bring himself into real touch with pathological or laboratory progress. For this post-graduate halts are necessary. In Europe facilities for such pauses in the daily task are becoming usual, but is it so for you in the East?

But further, in order to maintain active, living, bonds of sympathy and union between bedside and laboratory work, it is necessary that the work itself should overlap or intermingle. It is a mistake that all pathological work should be referred to a special department. As pathological methods gradually mature many of them become so secure, and so simple, that there is no longer complexity in their details, the work can be accomplished easily and satisfactorily by anyone with a fair initial grounding in broad principles, when that is so, it is desirable that the work itself should pass from the special department of the laboratory into the more general field of the wards, it should be no longer laboratory, but bedside clinical work. As illustration of what I mean, I would suggest that the work of examining the blood of fever patients for the malarial parasite, the stools of dysenteric patients for amoebae, the sputum of the tuberculous for the tubercle bacillus, is now so simple, the necessary apparatus so uniform, that it should no longer be laboratory but bedside routine. I do not know of any physician, who in his rounds takes with him as a matter of course his microscope, and a box of simple stains, but I do most hopefully anticipate the day when these shall be as

similar accompaniments of the physician as his stetho-scope and thermometer now are, true, they cannot be be carried in his topoe, or in his waistcoat pocket, but they are neither so bulky, nor so unsightly, as much that his colleague the Surgeon takes upon a journey.

When such simple investigations as these become regular bedside observations, there will be but a short step indeed between laboratory and ward, the clinical worker will be in constant touch with exact methods, his duly object will be exact diagnosis, understanding of and sympathy with the more specialised worker, the pathologist, will be common and natural, not rare, and acquired. Whenever, from time to time, the simple methods fail, the clinician will, without doubt or hesitation, be anxious to avail himself of the more complex methods as yet available to the specialist only. He will appeal for laboratory aid with understanding, and with the preliminary simple examination already carried out. Clinician and pathologist will each be daily practising similar methods, and exercising similar trains of thought, each fully cognisant of the other's doubt and difficulties they will no longer feel separate workers in different fields, but will know themselves for fellow workers in a common field of knowledge, even though they be in different corners thereof. Thus the clinical laboratory will be a real part of, not a separate adjunct to, the clinical wards.

The clinical laboratory being thus closely linked with the wards on one side, it is not a far cry to the further field of work, the more secluded, more specialised laboratory of pure research. Of course, both wards and clinical laboratories are places of research, but it is not usual so to dignify them. We have seen that for complicated research a certain amount of exclusion from daily work is essential, and in order to ensure this, it is not unnatural that a fair separation by means of special locality should be encouraged. But if these "research" laboratories are expected to interest themselves in the problems of medical work, they should have a very real and practical link with clinical work, such a link can be provided naturally by the clinical laboratories whose daily work intermingles with clinical observation. It seems to me that the best way to secure this close association between the two types of laboratories is to provide facilities and encouragement for occasional interchange of workers.

I do not think that in addressing the audience present before me, it is necessary to more than mention this, it does not, I am afraid, actively concern you, and I allude to it only in order to complete my ideal. I assume that your practical interest in laboratories is in the clinical laboratory alone, the strength and utility of which are largely within your hands. In connection with the more specialised laboratory for research, I would only point out that its stimulus, and fertile vitality, should come from its close association with its near relation the clinical laboratory, if this be weak and atrophied from neglect and misuse, the activity of its noble and honoured relative is sadly curtailed, and its usefulness much diminished.

I dare say that I have bored you with this discursive address, but, gentlemen, I care not—consider the importance of laboratory work in all branches of your profession.

Without laboratory aid, in medicine you are but groping empirics, in surgery but skilful mechanics, and for general progress you hope in vain. The soul of your Profession dwells within the laboratory, and it is upon the intelligence with which you practice your craft that this soul depends for its healthy

You are assembled to day in a hospital magnificent in brick and mortar, in tiles and marble, some of us hope that in years to come this hospital of ours may be magnificent in things less palpable, but much more valuable, in medical and surgical work boldly imagined, and soundly performed. Should this hope be fulfilled, I venture to

prophecy, that in that future day a speaker addressing some such assembly as this, after praising all and sundry, will dwell with special, lingering, fondness upon the part played by the clinical pathological laboratory. And, as I say, it is upon your right understanding, and loyal intelligent support, that the work of the clinical laboratory depends. You yourselves know full well that in your hands lie most of the practical details of medicine as practised in this land, you may sometimes think that you are but hewers of wood and carriers of water, and that but little honour comes your way, yet we are all fellow workers at the same building, whose noble proportions are the design, neither of this country nor of that, but of all lands, whose progress depends not so much upon the designers as upon you the workers. Let your co-operation be for worthy ends, that you may be enabled to carry on your work with understanding, and to be bold in the use of your intelligence, then you may rest assured that, by your present honour what it may, the beneficent nature of the building which you are helping to complete, will be a glorious memorial to your unsophisticated devotion and honest zeal.

SCLERO CORNEAL TREPHINING FOR STAPHYLOMA OF THE CORNEA—17 CASES

BY C. H. RLINHOLD, M.R.C.S. (Ed.),

CAPTAIN, I.M.S.,

Civil Surgeon, Bijnor, U.P.

The application of Elliot's operation to staphyloma of the cornea though recommended by Lieut-Col Elliot on pages 36 and 37 of his book on sclero-corneal trephining, has not yet, I believe, led to the publication of any cases. During 1913 I operated on 17 eyes for this condition, and the results appear to me to be sufficiently encouraging to merit publication.

The cases were not selected my object being first to satisfy myself that reduction of a staphyloma could be effected by establishing free filtration between the aqueous, in the anterior chamber, and the subconjunctival tissue, and this occurred very satisfactorily in 13 of the 17 cases.

In the majority of these cases no improvement in vision was expected or occurred, as the staphyloma was complete, but all the patients, with one exception, expressed themselves as very pleased with the result, and were at any rate relieved of an ugly deformity.

It is admitted that this operation will have little scope in Europe or America, but in conservative India where the majority of our patients prefer to retain an unsightly and sightless eye, rather than have it enucleated, it should undoubtedly prove useful, for its cosmetic effect. In selected cases, where there is some clear cornea in front of the pupillary area, in recent cases, where the cornea is still yielding, and in cases of conical cornea, much benefit should result to vision, from this operation. Filtration having been established, the pressure of the closed lids on the front of the globe effectively splints the

corneal surface and causes it to retain its normal curvature

In 6 of my cases (Nos 4, 5, 6, 11, 16 and 17) the vision was much improved, the patients volunteering the information that the distortion of images previously complained of, had been relieved

It would be reasonable to expect that the more recent the lesion, the better would be the prospect of cure, but in two cases (Nos 12 and 17) there was remarkable improvement after 4 and 10 years, respectively

The operation is contra-indicated in those cases where it is suspected that the suspensory ligament has given way, and the lens has ridden forward into the anterior chamber, for here, there is not only liability to rupture of the lens capsule by the trephine, as happened in one case (No 7) but, even if the trephining is successfully accomplished, the lens is apt to block the trephine hole, stopping filtration and so causing recurrence, as happened in two cases (Nos 1 and 13)

In these cases also, the hyaloid may be ruptured and the vitreous damaged

The operation is not difficult, but it is not as easy as in glaucomatous eyes, where the increased tension facilitates the trephining

In staphyloma, the tension of the eye is usually normal or sub-normal

Cocaine anaesthesia is sufficient in adults, but chloroform is necessary for children

The conjunctival flap is taken from above and is made as long as possible, the larger the flap, the better the filtration

At the limbal edge great care must be exercised in splitting the cornea, as it is often abnormally thin owing to stretching and previous disease

At this stage it is easy to find oneself already in the anterior chamber, before applying the trephine, in which case the operation is completed with iris-scissors, cutting out a triangular piece of corneo-sclera to effect filtration

If all goes well, the trephine with a 2 mm blade (a larger blade of $2\frac{1}{2}$ or 3 mm diameter is recommended for very large staphylomas) is applied, when the cornea has been split to about 2 mm, the trephining being done almost wholly corneally. The trephine disc is usually hinged, and has to be removed by a snip with scissors. When the trephine disc has been removed, the iris does not usually prolapse through the trephine hole in these cases, as is the rule in glaucoma cases (in only 6 of my cases did the iris prolapse), since the previous disease has usually led to adhesion between the iris and Descemet's membrane. The iridectomy must, therefore, be done by introducing forceps into the trephine

hole and pulling the iris out, this is followed by a gush of aqueous, which usually does not occur in staphyloma cases until after the iridectomy

Owing to previous iritis, the iris is frequently extremely brittle, and often troublesome bleeding takes place into the anterior chamber. This should be washed out by means of McKeown's irrigator with a needle-nozzle, using normal saline solution, though the absence of irrigation does not necessarily spoil the operation, as the blood is generally easily absorbed

Having ascertained that there is a free passage for the aqueous, by passing a probe into the anterior chamber through the trephine hole, the conjunctival flap is now repositioned and the operation is completed

In none of my cases did I find it necessary to stitch the flap, and in all, the flap remained in good position and healing had taken place at the first dressing

If circumstances require the flap to be taken from below, it is necessary to stitch it in reposition

A pressure pad of cotton-wool is added to the dressings in proportion to the degree of the staphyloma and both eyes are bandaged

The first dressing is done 48 hours after operation, and, if the trephine hole is patent, there is already found to be a considerable reduction in the size of the staphyloma, the conjunctival flap is healed and oedematous owing to the flow of aqueous into the subconjunctival tissue, and the eye is soft

Atropine drops are instilled daily to guard against a quiet iritis, and the operated eye bandaged only for 8 or 10 days, after which it is also released, and it is found that the pressure of the lids is sufficient to retain the normal curvature of the cornea, providing always that the trephine hole remains patent and filtration is free

In one case (No 12) a secondary trephining was done below a week after the first to further facilitate drainage, the staphyloma was an enormous one and the patient had difficulty in closing the lids over it, when last seen the curvature of the cornea was absolutely normal, and though the eye was sightless, a hideous deformity had been removed. All the cases reported in this series are between 9 and 3 months old, and though I have been unable to see many of them personally recently, I have reports from my assistant and sub-assistant surgeons that the improvement in their condition has been maintained in 11 cases of the 17, 4 have failed and 2 have been lost sight of

I owe my best thanks to Lt-Col Elliot for encouraging me to publish these results

Serial No	Name,	Sex	Age	Eye	Duration of disease	Degree of staphyoma	Date of operation	Result	REMARKS.
1	Bakshi	F.	55	R	12 mos	Very large	13 5 13	Immediate result good, later bad	Recurrence, secondary operation on 13 8 13, but result unsatisfactory.
2	Sohru	M	25	L	11 "	Large	14 6 13	Good Curvature of eye restored to nearly normal	Lost sight of
3	Mohan	M	40	R	2 "	Medium	17 13	Ditto	Improvement maintained.
4	Shahedan	F	25	R	18 "	Ditto eccentric	29 7 13	Ditto	Improvement maintained. Vision improved.
5	Lal Das	M	25	R	6 "	Conical cornea	29 7 13	Good Curvature of eye appears quite normal	Ditto
6	Nader	M	22	R	12 "	Ditto	15 8 13	Ditto	Ditto
7	Nandri	F	22	R	2 yrs	Very large	15 8 13	Bad	Lens capsule ruptured, lens matter washed out with McKeown's irrigator. Trephine hole blocked
8	Imrat	M	45	R	2 mos	Medium	19 8 13	Good Curvature of eye appears quite normal	Improvement maintained.
9	Bhutan	F	23	L	5 yrs	Conical cornea.	13 9 13	Bad	Infiltration effected, but curve of corner not reduced. She had high myopia
10	Umar	F	25	L	2 mos	Medium	16 9 13	Good Curvature of eye appears quite normal	Improvement maintained.
11	Vahidah	F	25	R	4 yrs	Ditto	18 10 13	Good Curvature of eye restored to nearly normal	Improvement maintained. Vision improved
12				L	4 "	Very large	20 10 13	Bad	A secondary trephining was done below on 28 10 13 which further reduced the staphyoma so that the curvature of the eye appeared quite normal. Improvement maintained
13	Nanhua	M	10	R	2 "	Ditto	31 10 13	Bad	The suspensory ligament had given way and the lens blocked the trephine hole.
14	Kunja	M	35	L	3 "	Medium	3 11 13	Good Curvature of eye restored to nearly normal	Lost sight of
15	Jhabua	F	32	L	12 mos	Ditto	11 11 13	Good Curvature of eye appears quite normal	Improvement maintained
16	Nihal	M	35	R	6 "	Ditto	15 11 13	Good Curvature of eye restored to nearly normal	Improvement maintained. Vision improved
17	Subhan	M	35	L	10 yrs	Ditto	19 11 13	Ditto	Ditto

ABDOMINAL SURPRISES

BY A. NEVE, F.R.C.S.E.

THE diagnosis of abdominal conditions is beset with many stumbling blocks to the unwary. The surgeon calls to his help the physician, and the chemical analyst; the blood is examined, blood counts are made, all the secretions are tested, a skiagram is taken, perhaps combined with cystoscopy and a ureteral catheter. Yet with all these varied methods of investigation the clinician has no easy task in sifting the evidence, in weighing the value of the patient's statement

as to his or her symptoms, and deciding upon the prospect of relief afforded by an operation.

How often are the results of the most careful palpation doubtful, and the surgeon longs for the assistance of sight! It is indeed now possible by the aid of bismuth meals, to see a good deal. Within the last fortnight I have confirmed by operation the diagnosis of a much displaced hour-glass stomach, made with X-rays and fluorescent screen. During the last year I have thus seen very many internal organs, before using the knife, in one case we saw the right ureter with calculi strung out from the kidney to the bladder;

and I have watched the passage of a dangerously large non-nut through the danger zones, the pylorus and the ileo-caecal valve.

But still there are many conditions in which all the resources of the diagnostician may be employed and yet the operation is at its beginning an exploration. It is some of these cases which, when duly pondered upon, make one realise that the abdomen is full of surprises. I collect a few such from my own experience.

(1) P female, Kashmiri Mohamedan, rather emaciated, pale, complaining of pain and abdominal swelling for the last year. The lower half of the abdomen was swollen and hard but softened in patches where fluctuation could be felt. The upper line of hardness was irregular. An abscess was diagnosed of pelvic origin, and an incision made from which pus escaped. Exploring with my finger I came upon a piece of bone, and so enlarged my incision, and found the macerated skull of a foetus, a lithopædion, with its limbs buried in abscesses amid the bowel. In extracting it I opened a bladder diverticulum which was much drawn upward, and had difficulty in peeling it off the bowel which was torn at one place. Faeces passed once or twice by the wounds but there was no bladder trouble, and she made an uneventful recovery.

The history of a pregnancy about 4 years previously seemed established, and of trouble about the sixth month when the child, an extra-uterine foetation, died, but in spite of discomfort and failing health, it was not till the abscess formed that she sought our assistance, and got relief.*

(2) Another case a year later recalled this and led to an erroneous diagnosis. A female under thirty was brought to the Mission Hospital with a swelling in the abdomen which was painful. Pregnancy could not be definitely excluded from consideration, but the uterus was certainly not involved in the tumour which could be felt.

There were many somewhat movable masses on either side of the umbilicus, and on careful palpation these seemed to correspond to a possible foetal head, and small trunk and thigh, also foot.

Laparotomy revealed remarkably diffused sarcomata, of the omentum and mesentery. Their size and distribution threw no discredit on the ingenious diagnosis. Unfortunately the connections with the bowel and mesentery rendered any attempt at excision quite out of the question.

Most of us who have had long experience will recall interesting puzzles in the way of abdominal tumours. It is so easy to mark out on a normal abdomen the various regions, the spleen, liver, kidney, stomach and so on, but with increased experience we find it difficult to say dogmatically in which of these regions a kidney an ovarian

tumour, a stomach may not be found. The following case is one in which the X-rays would have saved a mistake.

(3) A girl of 14 complained of dyspeptic symptoms and of a large tumour in the lower half of the abdomen. I ordered the stomach to be washed out, as the gastric symptoms were those of dilatation. Unfortunately this was left to an assistant who subsequently brought a few ounces of acid fluid and some half digested rice grains, which were all that he could wash out. I found the swelling still tender, tense and large, so gave order for preparation for a laparotomy next day expecting to find an ovarian cyst with a dilated stomach. The incision revealed a mass the size of a large football occupying the lower two-thirds of the abdomen, and firmly impacted in the pelvis. I dislodged it with my hand, and puzzled by the relations made a puncture into the "cyst". Rice gushed out nearly a gallon of it. It must have been the accumulations of a fortnight or more! We washed the part, closed the puncture in the stomach and rapidly performed a postero-lateral gastro-enterostomy. The girl made a splendid recovery. After the first two days the stomach could be felt above the umbilical level. She began at once to eat ground-rice and milk, digested well and day by day got hungrier. In ten days she was eating meat, vegetables, bread and rice. The line of the wound healed by first intention except half an inch at the bottom but that did not discharge and in a few more days was dry. A month later the stomach could scarcely be felt.

4. In this connection I may mention another very displaced stomach which could scarcely have been diagnosed beforehand. It was a lad with hepatic ascites, and a large spleen. I inserted a trocar and canula at the usual place, midway between the pubis and umbilicus. No fluid came, so I cleared the canula with a stylet and noticed a whitish granular clot on it. This was sent to the laboratory at once to be tested, while I partially withdrew the canula, then changed its direction downwards and ascitic fluid came without bile. So the trocar had punctured a dilated stomach pressed against the parietes by ascitic fluid.

Next day under local analgesia I opened the peritoneum and explored. The ascitic fluid which had collected was not turbid, the much dilated stomach was immediately under my finger, and showed no trace of leakage. The enlarged spleen could also be felt near the wound. I inserted a hollow silver stud to drain the peritoneal cavity into the fascia outside and stitched the original incision.

The operation appeared to cause no pain, and the lad improved a little but it was evident that the stud was not keeping up drainage, for the ascitic fluid began to collect after a few days.

* Compare a case by Lt Col Newman, *I.M.G.*, 1913, p. 474

He was allowed to go home with instructions to return later for tapping. But in view of the general organic disease and anaemia it seemed likely that he would not live long.

An instance of a condition not possible to diagnose before opening the abdomen was the following —

5 An English lady was sent to me from the United Provinces, by a doctor who recommended an operation for prolapsus uteri. The prolapse was not considerable and I invited the opinion of an experienced lady doctor. I performed hystero-pexy a day or two later, and through the abdominal incision I found that the chief factor in the prolapse was a parovarian cyst with very lax walls, though as large as a cocoanut it was half empty, and no bi-manual or other examination short of laparotomy would have detected it. A tapping sufficed to cure it, a utero-suspension was done and within three months my patient was playing tennis. Two years later she had a child.

6. With reference to the doubtful diagnosis, I would mention just one more case, a woman aged 30 with a large tender tumour, the size of a child's head, occupying the right side of the abdomen. It was rather freely movable, above a narrow line of resonance seemed to separate it from the liver. There were no special kidney symptoms, but a nephroma was thought of. The abdomen was opened by Dr Rawlence who made a four-inch incision in the right semi-lunar line. The tumour when exposed seemed rather solidly melted together with the bowels, and appeared like a sarcoma of the mesentery. An incision was made into it, and at some depth hydatid fluid was found, and the whole cyst easily enucleated. The wound healed aseptically, but for some days her condition was doubtful, as she vomited much. This was apparently due to large numbers of lumbicoid worms, after these were cleared out she made a rapid recovery.

The surgeon and physician between them aided by the laboratory and X-rays may expect to clear up the diagnosis of nineteen out of twenty abdominal cases, but the twentieth will remain a puzzle till an incision is made, and he who makes it is like a sailor setting out to circumnavigate an unchartered archipelago full of unknown reefs and shoals. He has to be prepared to face formidable obstacles, such as adhesions of bowels, or misplacement of organs, and to deal with sudden almost overwhelming danger, as when a rush of haemorrhage comes from a deep torn pelvic vein, with nerves stimulated and thrilled by the fascination of exploration, yet steadied by experience, he has to be ready at a moment's notice to form the judgment upon which a life may depend. Shall he only drain, or is a short circuit to be performed, is a portion of bowel or an organ to be excised?

This it is which makes surgery a profession and an art which combines the scholarly scientific spirit of the laboratory with the courage of the battle-field and in no branch of surgery is this so emphasized as in these surgical surprises of the abdomen.

A Mirror of Hospital Practice.

A NEW OPERATION FOR THE CURE OF VESICO VAGINAL FISTULA

By F. C. FRASER

CAPT., I.M.S..

Asst. Supdt., Govt. Maternity Hospital, Madras

A LARGE number of operations have already been devised for the cure of vesico-vaginal fistula, and my apology for adding yet another to the long list is that it is an efficient one and if carried out correctly is certain to effect a cure.

Unless one takes the trouble to enquire into the lot of those afflicted with this trying complaint, one can form but little idea of the miserable life they lead. The average native woman so afflicted, is ostracised and driven forth from her husband, home and relations, until finally, she becomes an outcast somewhat lower than the pariah. It is this fact that perhaps explains why there is no class of case that comes more readily to hospital seeking a cure and none that shows more gratitude when cured.

Under the circumstances, any attempts to find new methods of operation to cure the complaint are not waste of time or thought.

The claim I make above, that the operation is efficient and sure is perhaps somewhat premature as it is based on only four operations, but the method itself was only arrived at after a large number of dummy operations, performed on a soft, plastic, wax model of the vagina, uterus and bladder.

The four operations so far done by the new method have all been successful and they comprise no less than four different types of vesico-vaginal fistula. Three of them had been previously operated on before by other operators without securing closure of the fistulae. One of them opened into the cervix uteri, one involved the urethra, one opened just below the cervix uteri and lay in the midst of thick, irregular scar tissue, the vaginal cervix having entirely sloughed away. The fourth was a simple case opening into the vagina midway between the cervix and the urethra.

From the above facts, it will be seen that the test of the operation has been a fair one and the signal success with which it has met, makes good its claim of efficiency.

The carrying out of plastic operations on a soft, wax model, previous to operating on the actual subject, I find to be an excellent routine measure. A little Rangoon wax can always be obtained from the bazar and a rough, kucha model can be easily made. It is much easier to carry out the operation on such a model than on the living person, and there is a great advantage in the fact that you can repeat it, or variations of it, an unlimited number of times, by simply remoulding your model and starting over again. One need therefore never approach a patient without previous experience of how to deal with the actual conditions present.

The two great causes of failure in operations for the relief of vesico-vaginal fistula are sepsis and leakage of urine into the wound, both of which prevent primary union taking place.

Sepsis is usually present to begin with, for the patient has had, probably for some months, a hole opening into the vagina from the bladder, through which a constant stream of ammoniacal urine has been dribbling. By operation, we add to this condition, trauma, sutures in the bladder wall and a catheter in the bladder itself, which must be frequently changed. It is not to be wondered at then, that these patients frequently get an acute cystitis. Even with such an array of septic potentials, sepsis is with us now a rare event and the honours for this must I think be divided between a careful iodinisation of the vagina and vulva immediately previous to the operation, and the administration of cystopurin as a routine measure for the first ten days after operation. The beneficial effect of the latter drug cannot be too highly rated.

It was the second cause of failure, viz., leakage of urine into the wound, that prompted me to devise a new operation, the principal points of which were that, firstly, it effectually shut off the bladder cavity for a time long enough to allow the wound to unite by first intention, and secondly, that it did not necessitate the leaving of any buried sutures in the wall of the bladder or in any part of the wound. The latter item is most important, for the presence of buried sutures nearly always leads to non-union of the wound from the occurrence of sepsis, septic organisms infecting the sutures from the bladder. Even should union be obtained, there is always the fear of a stone forming round the sutures in the bladder later on.

The Operation—1—The first step in the operation is an elliptical incision carried round the fistula. This incision hugs the margin of the fistula and travels out laterally for about half an inch or so on either side. If the edge of the fistula is much scarred, then its edges had better be pared to begin with. The vesico-vaginal septum is now split widely round the fistula,

until the bladder wall hangs loosely and can be invaginated into that viscus.

2 Two or more mattress sutures are now passed according to the size of the fistula. The needle is entered from below upward through the vaginal wall, at about half an inch from the edge of the wound and running deep in its bed, a little to the left of the fistula, is brought out through the vaginal wall again, at an equal distance from the edge of the wound. Doubling back, the needle is entered again half an inch to the right of the site of egress and retrieves parallel to its first path through the wound, picking up and transfixing in its course the invaginated bladder wall, and finally appears below, through the vaginal wall, half an inch from the edge of the wound and the same distance from the first point of entry.

A second mattress suture is now passed in the same way, the point of entry being a little to the left of the site where the first suture finally came out. This is to ensure the sutures interlocking, so that when tied, no possible path of leakage will be left. The suture passes up in a similar way to the first, running deep in the wound and picking up in its course the invaginated wall of the bladder. If only two mattress sutures are to be used then on the return journey, the second passes, deep in the wound, a little to the right of the fistula. Should the fistula be so large as to need a third suture to complete its closure then the second on the return trip will pass through the lumen of the fistula and the third on the same journey will pass external to the lumen. A third suture, if used, must be made to interlock with the second, or a gap will be left.

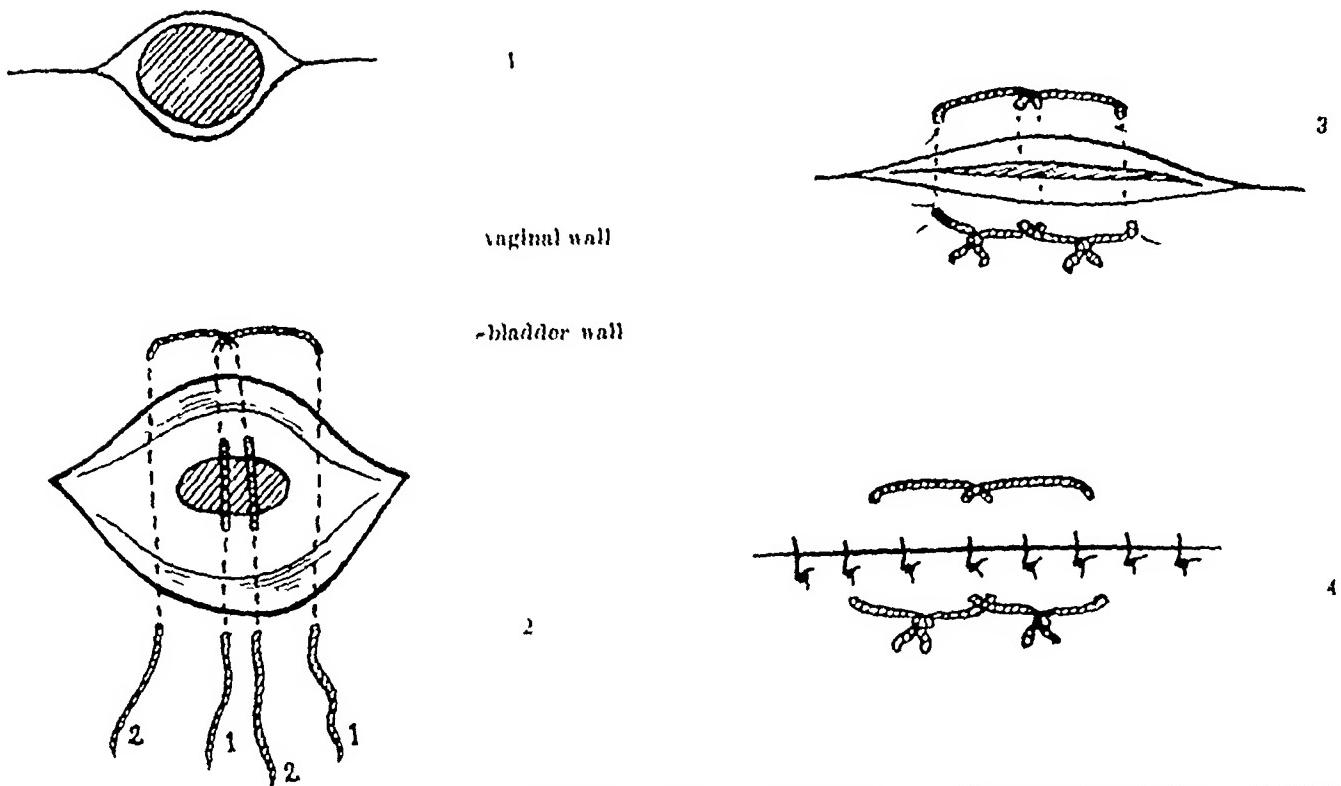
The three points which are absolutely essential are, that all sutures should interlock, the first suture should, when running from below upward pass to the left of the fistula and the last on the return journey from above down, should pass to the right of the fistula. If these points are adhered to, then the bladder will be completely shut off from the wound when the sutures are tied and tightened.

3 The mattress sutures are now tightened care being taken not to overdo this or they will cut out and also to see that the bladder wall is invaginated. As soon as this is done, it will be noticed that the lips of the wound are markedly eviated, this being due to the approximation of the upper and lower limits of its floor.

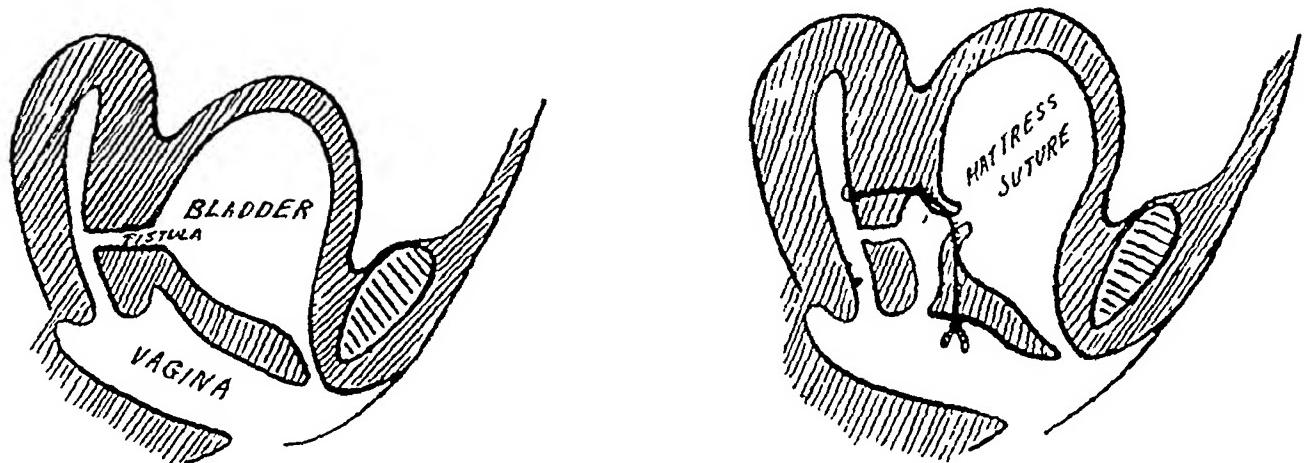
4 Substituting fine silk for the thick used for the mattress sutures, the margins of the wound are brought together with some seven or eight sutures, tied lightly so as not to interfere with the circulation. They are entered and brought out at about one-quarter of an inch from the margins of the wound and as there is no fear of the wound being soiled from leaking urine, they need only be tied sufficiently tight to bring the

A NEW OPERATION FOR THE CURE OF VESICO-VAGINAL FISTULA.

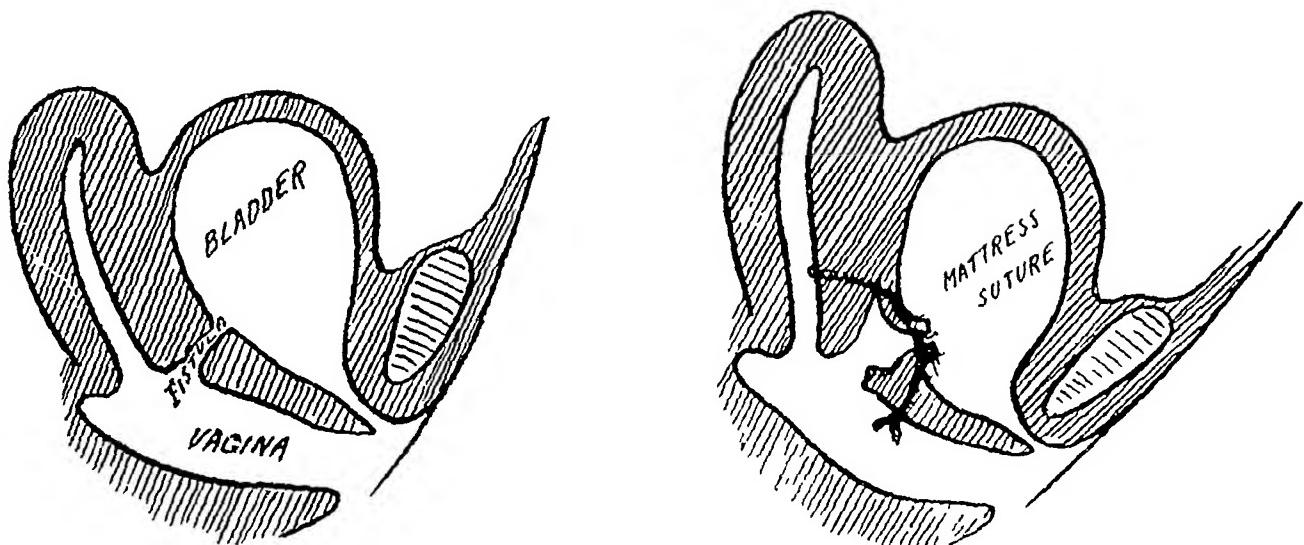
By CAPT F. C. FRASER, M.B.,
Asst Surgt, Govt Maternity Hospital, Madras



A—1 Incision round fistula 2 Dissection complete and mattress sutures passed
approximated 3 Mattress sutures tied, lips of wound
4 Suturing completed



B—Lateral view of pelvic organs showing fistula opening into the cervix, the second diagram showing how the dissection is carried out and the path of the mattress suture



C—Lateral view of pelvic organs showing a fistula opening into the vagina immediately below the cervix. The second diagram shows how the dissection is carried out and the path of the mattress suture

raw surfaces of the wound in close apposition. This will ensure rapid union, an important point, as the deep sutures must be removed on the sixth day or they will cut out. Good and rapid union therefore is essential for the success of the operation. The mattress sutures are kept in until the sixth day and the superficial ones are removed on the eighth. A catheter is kept in for ten days and changed daily with strict aseptic precautions. Cystopum tabloids, two every four hours are given for the first ten days. Patients are allowed to sit up on the eleventh day and to walk on the fifteenth, but they are not permitted to leave the hospital for some three weeks after the operation as too early intercourse might lead to the young wound breaking down again.

The position of the fistula calls for slight modifications in the method of procedure and I will briefly describe these.

If the fistula involve the urethra, then instead of the vesico-vaginal septum, the wall of the urethra must be split, a much more delicate procedure but one which can be done with care. My second case was such an one and although the woman only possessed half an inch of urethra, after the operation, she no longer leaked and had perfect control over micturition.

When the fistula opens close to the cervix uteri or actually into it, the operation becomes much more difficult. In both of such cases you will have to separate the uterus from the bladder or, in other words, instead of splitting the vesico-vaginal septum, you split the utero-vesical one. The difficulty in these cases is, that the mattress sutures have to be passed through the anterior wall of the cervix and to return the same way. Using curved needles, Hagedorn for preference, for the tissues of the cervix are exceedingly tough and usually lead to a Bonny's needle breaking, the suture is passed from below upward through the anterior wall of the cervix, after having of course first traversed the vaginal wall below and the deep structures of the wound. Passing through the cervical canal it is brought out of the external os, the needle reversed and passed up the canal again and once more made to traverse the wall of the cervix in the reverse direction. In the two cases I performed this on, but little difficulty was met with and if any had occurred I should not have hesitated to split the cervix up as this would clear the road for the sutures and the split cervix could easily be sutured up again afterwards. The cervix would, of course, be split from side to side and not from before back. It is essential to carefully and thoroughly separate the cervix from off the bladder, before passing the sutures and it will be seen, when these sutures have been tied, that the whole cervix has moved bodily down and is in a way plastered over the fistulous opening. The splitting of the vesico-vaginal septum must

be thorough, half-hearted measures in this part of the operation will be sure to invite failure.

When the fistula opens into the cervical canal direct, the first step is to carefully separate the cervix from off the bladder to a distance of quite half an inch above the fistula. The fistulous canal in the cervix is then pared and the sutures passed as before, through the wall of the cervix, well above the site of the fistula. When the mattress sutures are tied the dragging down of the cervix will bring the walls of this part of the fistula in such close apposition that union takes place readily without the application of further sutures. The final stage of the operation in such cases is to close the wound by passing superficial sutures from the vaginal wall to the edge of the cervix. The accompanying diagrams will I think render clear any points which I have failed to elucidate in the text.

ASCARIS INFECTION

BY R. F. MACGREGOR M.B.,
CAPT., I.M.S.,

Tuldhah

The following account of a case of severe infection with ascaris lumbricoides, which occurred in a sepoy of this regiment, may prove of interest. The patient was Rifleman R. R., a man with six months' service, who had never been in hospital before, though he had occasionally complained of attacks of pain in the abdomen. I learned later that he had had "worms" in childhood.

So severe were the initial symptoms that in the urgent note which I received early in the morning, the case was diagnosed as probably cholera. Certainly when I saw the patient it would be impossible to imagine a case more like the typical text-book description of cholera. There were the pinched sunken expression, the cramps, incessant vomiting and diarrhoea. There was suppression of urine and the patient seemed absolutely collapsed. I took a smear from his stools and examined it at once to my surprise the outstanding feature was the presence of numerous ascaris ova, with here and there ova of trichocerephalus dispai. When I returned to the small ward in which the patient had been put I found that in the last motion a round worm, 10 inches long, had been passed. This seemed to clinch the diagnosis and he was at once put on santonin, the result of which will be seen below. The curious point in the case was the fact that, of the total of 56 round worms evacuated by the patient, the great majority were vomited after, as a result of santonin, which was not well tolerated. The worms seemed to be distributed all

along the intestinal track some were passed after much straining, thus indicating that they were lying low down in the alimentary canal, while others caused severe gripping pain. A "knot" of three worms was vomited after much straining associated with considerable jaundice, so it is fair to assume that these worms occupied the duodenum. Others were vomited with little effort.

I do not know whether 56 is anything approaching a record in the way of *ascaris* infection certainly in my limited experience I have never come across so many in one host, and of course the severe symptoms gave the case an added interest. From the structure of *ascaris lumbricoides* one would not judge that it could stick very tenaciously to the intestinal mucosa, but I found in this case that, as a result of santonin, the worm seemed to be very slowly dislodged this may of course have been due to the wide intestinal area over which the *ascaris* was distributed.

Altogether the patient was under treatment for 20 days and was discharged from hospital when he had been for 5 days egg and worm free this excluding the ova of *trichocephalus dispar* which were still present. Infection with *trichocephalus* is comparatively common in this district, and the worm appears to cause no symptoms, so I suppose there is no reason why an *ascaris* infection should not be superadded, though the individual might well be contented with one.

As regards blood examination, an average count showed 20 per cent eosinophiles, the highest noted being 25 per cent. On his discharge from hospital the eosinophiles of this patient numbered 19 per cent. He was again admitted to hospital a week after he had been previously discharged, complaining of pain in the region of the splenic flexure he was given santonin and passed one round worm. After a stay of four days in hospital he was discharged, the eosinophiles then numbering only 2 per cent and the patient being regarded as cured.

This is a new cantonment and the worm question has naturally not yet been fully worked out. So far I have not come across a case of ankylostomiasis, although that disease abounds in the neighbouring tea-gardens. The absence of ankylostomiasis can readily be accounted for by the fact that the men of the regiment invariably wear boots, the legs may be bare, but there is always some protection to the feet, no matter how short a distance they may be going.

Since writing the above I have been struck by the comparatively large number of recruits who harbour the *ascaris* it will be interesting to ascertain in what proportion of men it is present.

A CASE OF BILHARZIA DISEASE

BY A HOOTON,
MAJOR, I M S

On the 13th December 1913 a Paisi girl of 5 years suffered from an attack of fever, which was thought to be malarial, and disappeared after quinine had been administered for about a week. On the 4th January, however, the fever recurred and at the same time the urine was noticed to be smoky in colour, and there was pain on micturition. The urine then became definitely red, micturition was frequent, and the child complained of a burning sensation at the vulva, and pain in the hypogastrium. A thorough sounding of the bladder under an anaesthetic gave a negative result. There was no oedema, or pain in the loins, and after a few days the temperature again fell to normal and the child seemed almost well, though the urine remained red. The case did not strike one as an acute nephritis, and samples of urine examined from time to time showed no casts, but on two occasions Bilharzia ova were found, with typical terminal spines, and in one of the preparations two free embryos appeared, swimming actively across the field. Treatment was at first confined to dieting, and the administration of demulcent drinks, but when the haematuria persisted calcium chloride was given for three days. The effect of this was at once manifest. The urine became less red and at the end of the three days was normal in appearance. The ova have now disappeared from the urine, and the child is apparently in her usual health. The haematuria lasted from the 4th to the 15th January. This case may perhaps explain some other obscure cases of haematuria which have been under treatment in the West Hospital, Rajkot, during the last year, but in which examination of the urine failed to show any Bilharzia ova. In two of these, in particular, I suspected Bilharzia, owing to the corrugated, leathery character of the mucous membrane of the bladder on sounding.

In this connection I have read with great interest Dr Milton's article in the *Indian Medical Gazette* of January 1914, and I also see that Castellani and Chalmers mention that the disease occurs in India. It appears, however, to have been very seldom recorded, and must be either rare, or restricted to definite localities, or else, as Dr Milton suggests, have escaped observation owing to the haematuria, which is apparently so typical in Egypt, being less marked in this country. It is very improbable that a widely prevalent haematuria would have failed to attract attention which would have resulted in the detection of the ova.

I have to thank Dr B Anklesaria, with whom I saw the child, for some of the above details.

Indian Medical Gazette.

MAY

FURLough IN I M S

The following article deals with not the least of the troubles of officers of the Indian Medical Service at the present time. We believe that the Government of India are prepared and willing to remove all legitimate grievances but it is doubtful if it is understood to what an extent the difficulty of getting leave and the inadequate leave allowances are felt as hardships by the rank and file of the service and the suggestion put forward in the following article has been offered to us as a reasonable and fair means of meeting an admitted difficulty.

THE LEAVE DIFFICULTY AND A SUGGESTED REMEDY

One of the most pressing disabilities of the I M S at the present time is the very general difficulty of getting leave. Not indeed of getting all the leave admissible but of any moiety of leave long accumulated and overdue and this, moreover at a time when there has been no general stoppage on account of widespread famine or military operations for many years. The difficulty is proverbial and has almost come to be regarded as a not unnatural state of affairs. We believe we are not overstating the case in saying that few I M S officers—in civil employment at all events—have not experienced this difficulty almost as often as they have applied for leave. Apart from the postponement and eventual forfeiture of much hardly earned leave, the uncertainty, suspense and unnecessary expense entailed by the deferment of sanction to literally the eleventh hour, are only a degree less vexatious than its refusal.

Such delay not only deprives the leave of much of its pleasure in anticipation, but as no plans can be made beforehand, represents a very definite financial handicap at a most inconvenient time. Detailed instances of this are unnecessary, it is axiomatic that hastily undertaken preparations are always more expensive than duly matured plans.

We are not in a position to estimate at their true value all the various causes which have led up to the present difficulty, stated in general terms, the obvious reason is a shortage in the cadre of

the service, coupled with an increase in the individual duties. The main contributory cause has unquestionably been the enforcement of the "Morley doctrine." A subsidiary reason is the concession of study leave *without increasing the leave reserve* to meet it. As study leave has rightly been conceded a prior place to ordinary furlough, the gradual damping back of the normal flow of leave, after some ten years or more is beginning to be felt. Local conditions such as the simultaneous absence of several men on more than one year's leave in the same province or administration, of course increase the local shortage. This is paradoxically enough an expression rather than an aggravation of the general shortage, and it follows that the recall of men from leave only shifts the incidence of the burden without remedying it.

Further causes for accumulation are undoubtedly to be found in the peculiar exigencies of private practice and the inadequacy of the existing rates of furlough pay. We may deal with this latter question on a subsequent occasion and need only point out here that before a man can take furlough he must make some financial provision to meet the expenses of living while on leave. With regard to the former cause it is only natural that when a man is posted to a station where he can save a little, he should be reluctant to run the risk of losing the appointment by taking furlough particularly as confidence in a doctor is a plant of slow growth. This was recognized in certain provinces a few years ago and the rules governing a hen on an appointment were for a time enforced in the case of senior officers. With the lapse of time however these rules have been to some extent forgotten.

The net result of these and other causes, is that a very considerable proportion of the leave admissible under the rules is accumulated and eventually forfeited. A census of the amount of leave actually earned and the amount of leave actually taken by I M S officers, would throw a veritable searchlight on the present state of affairs, and afford a vivid picture of the present congestion.

Whatever the relative importance of these various causes may be, the obvious remedy consists in bringing the cadre of the service up to its full strength and in increasing the leave reserve to cover study leave. We recognize, of course, that it is much easier to formulate the

remedy, than it is to carry it out, especially at a time like the present when the attractions of the service for the best men are on the wane. It is obvious that wholesale recruitment under such circumstances must have serious ultimate consequences. Common prudence indeed postulates that there must be no unnecessary haste in applying this remedy, until the confidence of the leading medical schools has been regained by an improvement in the conditions and prospects of the service.

A SUGGESTION

This being so, we venture to make a suggestion for the relief of the present shortage of leave. We make it with some diffidence, because it is no new suggestion and because it has been condemned or at least has not been accepted, as a permanent principle. At the same time we make it with confidence that it will receive serious and sympathetic consideration as a temporary mitigation of the present difficulties and as an act of retrospective justice to many I.M.S. officers who have borne more than their due share of the burden and heat of the Indian day.

Our suggestion is this, that until the cadre of the service can be brought up to its proper strength and a graduated and more adequate scale of furlough pay is sanctioned, I.M.S. officers in civil employ may have the option of commututing a certain proportion of their already accumulated years of furlough, under both civil and military rules, to leave for half the time on the maximum rate of furlough pay viz £1,000 per annum. Leave thus taken, whether in combination with any other kind of leave or not, must not in any case involve a continuous absence of more than one year at a time. The proportion of leave thus commutable by any individual officer would be calculated by multiplying the total amount of furlough in years at his credit, by his length of service in years and dividing the result by thirty. The figure 30 is taken, as it is the total number of years' service necessary for the ordinary maximum pension.

We have not space within the limits of this article to examine this proposal in all its aspects. It will suffice to state that we have subjected the calculation to numerous tests, and that it answers two important conditions (1) It provides a reasonable sliding scale in practice, and (2) and

affords an automatic safeguard against any excess of furlough being thus commuted.*

The objections offered to this suggestion as a permanent principle, when it was raised by the Decentralization Commission were briefly these. Its adoption would either imply that the present leave rules are too liberal, or would encourage officials to forego leave at the risk of their health and efficiency. A further objection was that it might produce a surplusage in cadre. We do not see how these objections are applicable if the principle is applied as a retrospective measure of relief only. Whatever the causes may have been, the accumulation of leave is now a fact accomplished, recognition of this fact is no more a proof of the unnecessary liberality of the existing leave rules than its non-recognition is a proof of the reverse. Its recognition is merely an acknowledgment that many I.M.S. officers have been unable to avail themselves of a considerable proportion of their admissible leave in the past and will have to forfeit much of it in the future.

Again, as the concession will only have retrospective effect on leave already accumulated at the time of promulgation it will not tend to encourage officers to accumulate leave in future and by so doing, to risk impairing their efficiency. whatever harm may have resulted from this already, is past and unalterable. On the contrary it would in certain instances have exactly the

* To take two concrete instances. A with 24 years' service has 3 years' furlough to credit. He could commute $\frac{24 \times 3}{30} = 2$ years, 4 months, 24 days, by taking half, or 1 year, 2 months, 12 days, on the maximum rate of £1,000 per annum. B with 16 years' service has $2\frac{1}{2}$ years' furlough to credit. He can commute $\frac{16 \times 5}{30 \times 2} = 1$ year, 4 months, by taking half or 8 months on the maximum furlough rate of £1,000 per annum. A after taking 1 year in this way, has still 1 year's furlough to his credit, of which 4 months, 24 days are commutable to half on a subsequent occasion. In three years' time, the earliest occasion on which he can next take leave, he will have 1 year and 9 months accumulated. It is open to him to wait 3 months and take this preparatory to his retirement, or wait 1 year and take 1 year of which 2 months, 12 days could be taken on the maximum rate. In his case the State would run no risk, the margin of leave is more than ample. B, after taking 8 months on the full rate, has still 1 year, 2 months ordinary furlough to his credit. If he takes 4 months' ordinary furlough in addition to complete the year, he still has 10 months on his return. He is not likely to do this, as 3 months' privilege leave + 1 month's ordinary furlough would serve better, leaving 1 year and 1 month to his credit. In three years' time he will have accumulated 9 months more, or 1 year and 10 months at the commencement of his 20th year of service, exclusive of privilege leave. Here the risk to the State is practically non-existent, as the margin of leave is ample. We think these instances establish our contention of an automatic safeguard, and a well adjusted sliding scale.

opposite effect. It would encourage more senior men to take a larger proportion of the accumulated leave now due to them than in all probability they can ever afford to do on the present scale of furlough pay in place of taking two years' leave preparatory to retirement only. Moreover this boon would be applicable at a time of life when they are in greater need of more frequently recurring periods of rest and change than was the case in their earlier years. The fear of creating a surplusage of cadre so far from being an objection, is a positive recommendation for any tendency that the concession might have in this direction, would assist in postponing the necessity for a sudden increase in cadre at a time competition for the service is at a low ebb. Further, the provision limiting the period of leave thus taken to not more than a year at a time would help to relieve existing local stagnation by discouraging seniors from taking prolonged periods of leave at the very end of their service.

One objection which will be taken we must admit. It will cost money. This is after all a relative objection only and we believe the result in promoting contentment and efficiency would prove it to be money well spent. Finally it would be a speedy, a simple, and a gracious method of granting some measure of retrospective compensation for the disabilities under which many I.M.S. officers have laboured for some years past. *Bis dat qui cito dat*

Current Topics.

CRAWFORD'S HISTORY OF THE I.M.S.

We are glad to be able to inform our readers that this eagerly expected book is well through the press and the author with characteristic thoroughness is compiling a full and accurate index. The book will consist of two volumes, the paged proofs of which lie before us, the first volume reaches from the "first beginnings" to chapter XXII, dealing with appointments to the service and examinations, volume two begins with a chapter on administration and ends with chapter on medical societies and medical journalism in India and an additional chapter bringing matters up-to-date, and a very complete bibliography. Vol. I consists of 529 pages, and vol. II of 484 pages.

We propose in an early issue to continue our more detailed account of the contents of this interesting book. We here quote the dedication —

10

THE MEMBERS

Part and Present

Of that great service to which for over thirty years
The compiler was proud to belong, this attempt
To set forth the origin and growth of
The Indian Medical Service
is dedicated.

"*Haec fortes ante Agamemnonum
Vultu, sed omes illucramabile,
L'gentur, ignotique longa
Vocle, eunt quin rite sacro*"

Horace, Od. xii,

OLIVER GOLDSMITH'S MEDICAL QUALIFICATIONS

The Indian Medical Service has an interest in the disputed question of the medical qualification on the strength of which Oliver Goldsmith obtained a precarious living in London before he became known as a great poet in the circle ever made famous by Boswell's life of Dr Johnson. On his monument in Westminster Abbey, Dr Johnson's noble lines claim Goldsmith as a medical man: "Poeta, Physicus, Historicus, qui nullum seie scribendi non tetigit, nullum quod tetigit non ornavit." Yet where did he get his degree?

Lord Macaulay's statement is usually repeated that "if his own unsupported evidence may be trusted he had obtained a doctor's degree on the Continent."

There is absolutely no evidence in any existing records to show that he got a degree at Padua or at Louvain.

This question is ably examined by Sir Ernest Clarke in the *Proceedings of the Royal Society of Medicine* (Vol. vii No 4, February 1911), in which some books and documents are reviewed which belonged to the famous Bishop Percy, a friend of Goldsmith and a member of Johnson's circle. Bishop Percy records a verbal statement of Goldsmith that "he took the degree of M.B., after his A.B., when he was about 20," i.e., in the year 1748 or 1749. We know as a fact that he took his B.A. degree in Trinity College, Dublin, on 27th February 1749, and then, as now, no student could take a medical degree without having also taken the degree of Bachelor of Arts. If so, Goldsmith must have taken the M.B. in about 1749 or 1750. Unfortunately the records of Trinity College, while proud to claim him as a B.A., give no hint of his having taken the M.B. That he however did get such degree is surely clear from the fact that the University of Oxford admitted him to M.B. *ad eundem gradum*, and this fact is proved by an extract from "Jackson's Oxford Journal of Saturday, 18th February 1769," and in the title page of the poet's great work *The Traveller*, the author's name is given as, Oliver Goldsmith, M.B.

In spite however of this degree, poor Oliver was rejected as "not qualified" for appointment as "hospital mate," in the H.E.I.C.'s service on the Coromandel Coast.

The Oxford evidence then shows beyond reasonable doubt that he had an M.B. of Trinity College, Dublin, on the strength of which Oxford gave him then M.B. "ad eundem gradum".

AN HONORARY STAFF IN CERTAIN CALCUTTA HOSPITALS

The well-known Mayo Hospital and the Sumbo Nath Pundit Hospital, Calcutta, have advertised for the posts of Honorary Physician, Honorary Surgeon, 2 medical officers for outpatients, a paid pathologist and a paid anaesthetist.*

We shall watch this new departure with interest. We note that there is apparently no addition to the resident staff, which apparently will have to look after the patients not only of the superintendents but also of those of the Honorary Physician and Surgeon. The appointment of a pathologist and of an anaesthetist is altogether good.

KING EDWARD VII SANATORIUM, BHOWALI, U.P.

These buildings have been enlarged during the year and there is now accommodation for 47 patients, 5 European, 42 Indians. The Children's Ministering League, U.P., have given Rs 3,000 for a two-bedded cottage for European or Eurasian patients.

Since the opening 145 patients have been admitted. The following note on the classification of these patients is of particular interest.

The 116 cases according to Turbain's classification are arranged as follows—

Stage I T ₁	— 33 or 28.4%
" II T ₂	24 or 20.68%
" III T ₃	59 or 50.8%

The corresponding figures in a certain large sanatorium in England, K.E. Sanatorium, Midhurst, for the year ending June 1912 are 27%, 53.8% and 19.5%.

Such a classification, ignoring as it does the most important factor in the disease, namely, the systemic infection by the toxins produced in the disease, is unsatisfactory by itself, but combined with the most easily measured manifestation of the disease, namely, the effect on the temperature, will give a fair picture of the class of case dealt with. The cases at admission are in this way arranged as follows—

(Oral temperature 5 minutes)	T ₁	T ₂	T ₃	All stages	English sanatorium
Minimum temperature below 99°F	14	3	5	22 or 19%	75.6%
99°—99.9°	15	9	11	35 30%	
100°—100.9°	3	7	9	19 81% = 16.37%	24.4%
101° or over	1	5	34	40 = 34.48%	
	33	24	59	116	

The corresponding figures in the English sanatorium referred to for all stages are noteworthy for comparison as to kinds of case seeking treatment.

Nine patients or 7.75% suffered from Complicating Tubercular Laryngitis, other disease conditions were present in 21 or 18.1%. 78.4% had Tubercle bacilli in the sputum. Treatment is carried out by the due proportion of rest and exercise under open air conditions, together with a suitable dietary and general medicinal treatment. Treatment by Tuberculin, as supplementary treatment, was given for 12 doses or over in 68 cases—no series of similar cases is available for comparison, as every case deemed suitable is given Tuberculin, and this is not confined to afebrile cases. The apparent results give every encouragement for its continuance.

As regards the immediate result of treatment the following term among others is used.

Arrested—Absence of Tubercle bacilli in sputum and of all signs of active disease together with apparent perfect health and capability of prolonged exertion.

Arrested	Much improved	Improved	Stationary	Worse	Died
33 cases T ₁ 23 (69.69%)	7	1	1	1	—
24 " T ₂ 4 (16.6%)	11	5	3	1	—
59 " T ₃ 3 (5%)	9	11	20	8	3
116	30	27	17	24	8
or 25.8% or 23.25%	14.65%	20.6%	10.8%	6.9%	

Classified according to the maximum temperature on admission, the following are the figures—

Arrested	Much improved	Died
22, under 99°	54.5%	31.8%
35, of 99°—99.9°	37.0%	40.0%
19, of 100°—100.9°	21.0%	10.5%
40, of 101° and over	2.5%	10.0%

Tubercle bacilli were lost by 21.97% of the patients as follows—

T ₁ cases 12 (35.3%) showing	TB loss percentage 66.6
T ₂ 20 (85.3%)	20%
T ₃ 59 (100%)	13.5%

The average gain in weight of 82 patients was 13lbs with an individual maximum of 53.5lbs., 18 patients lost weight at an average of 3.10lbs., 16 patients were too ill to be weighed.

Eight patients died. The length of stay of these patients was 31, 13, 11, 10, 120, 81, 42 and 20 days, making an average of 41 days. Five of these cases were almost moribund on admission. Of 9 patients suffering from complicating Tubercular Laryngitis, 5 were discharged improved, 2 as stationary, and 2 died.

The average stay in the sanatorium of the 116 patients was 97 days, with the individual maximum of 336 and a minimum of 10 days.

The condition of 11 arrested cases, one year after discharge in 1912, is as follows—

Well	Much improved	Died	Not known
11 arrested cases	7	1	1
7 much improved	3	3	1

The figures, as the result of treatment, are worth careful study, pointing out as clearly as they do the favourable prospects for the disease in its early stage and also when the fever is absent or slight.

With a temperature ranging to 101° (oral temperature) and over, it is questionable whether patients are likely to do any better in the hills than even in the trying hot weather and rainy season of the plains—the transfer to the hills necessitates a prolonged and tiring journey and also a certain residuum of power of bodily reactivity to the colder climate. Many of the patients have shown a definite increase of all their symptoms for a time after admission. The higher elevation too, with its lowered barometric pressure, tends to increase the respiratory rate—a factor to be guarded against in acute

* Similar appointments are being made in the Sissoon Hospital at Poorni.

disease conditions. A suitable hospital for acute cases and also chronic cases with marked symptoms, would be one close to the Railway at an elevation of two to three thousand feet. This sanatorium situated at 6,000 feet and 15 miles over the hills from the Railway is not suitable for such cases.

The Sanatorium is on the Ranikhet road, about 6,000 ft and 21 miles from Kathgodam Railway station by the cart road, 11 miles by short cuts, 'tumtums' and tongas are available. Application must be made to the Superintendent, Major A. Cochrane, M.D. (Lond.), F.R.C.S., I.M.S.

We have recently seen an old circular letter of July 1890 by Colonel G. F. A. Harris, M.D., F.R.C.P., I.M.S., written when Civil Surgeon of Simla, in which the following passage occurs: "The question might be solved by giving fractional doses of emetine in dysentery and noting its effects, and if it can be shown that emetine can and does cure dysentery, why then not give it alone and not sicken our patients with huge and heroic doses of Pulse Ipecac?"

It is a pity that Colonel Harris was not able to follow up this recommendation, he might have discovered the specific effect of emetine more than 20 years before its actual discovery by Lieutenant-Colonel L. Rogers.

A RECENT article (*Indian Medical Gazette*) by Captain Napier, I.M.S., on a possible connection between syphilis and blackwater fever has been very widely commented upon. That there is a connection of syphilis with paroxysmal haemoglobinuria is admitted, so it is desirable that the point raised by Captain Napier should be followed up, especially nowadays as such a lot of good work is being done on syphilis by such workers as Dr J. E. R. Macdonagh, R. L. M. Wallis, and others. See various articles in the *Biochemical Journal*, &c.

DR GLEESON, L.R.C.P.I., Civil Surgeon, Dimapur, has sent us a cheque for Rs 15 towards the fund for repairing I.M.S. graves in the Military Cemetery, Calcutta. More subscriptions are wanted.

CAPT S. HAUGHTON, I.M.S., Civil Surgeon of Malakand (N.W.F.P.), informs us that he has several spare copies of the *Indian Medical Gazette* for the past 9 years which he will be pleased to send to any one requiring spare numbers to complete sets.

OUR readers are advised to get a copy of Dr Elizabeth Bielby's *Medical Hints for Indian Ladies** and to recommend it to their Indian patients. It is full of good and practical advice,

plainly and clearly written and with special reference to the Indian mother and her infant. Dr. Bielby's chief object is to "teach Indian women how to bring forth a more healthy race of men and women." Successive chapters deal in clear and simple language with menstruation, leucorrhœa, self-abuse, sterility, pregnancy, the lying-in period, care of patient and baby, sucking.

This excellent little pamphlet only costs 8 annas and should have a wide sale in India.

With reference to the newspaper crisis in the affairs of the Calcutta School of Tropical Medicine, it is a fact that delay must be anticipated owing to difficulties as to the site, a small part of which consists of a filled-in tank. This, however, it is expected will be got over. As regards the Staff, we understand the Government of Bengal have taken up the matter and are addressing the Government of India. Meantime donations are to be welcomed to endow special professorships and we are sure that the great Commercial and Trade Associations of Bengal, and Eastern India generally, will combine to give their support to this great school of preventive medicine and research.

OWING to pressure on space a considerable number of valuable articles in type and in hand are unavoidably held over.

REVIEWS.

Personal Hygiene (in Bengali). By DR CHUNI LAL BOSI, M.B., F.R.C.S. Calcutta 1913

In this small volume in Bengali the author has successfully attempted to explain the rules of health to be observed in respect of the daily habits of a native of India. He dwells upon the importance of early rising and deals with such subjects as, bathing, meals, drink, smoking, recreation and rest, exercise, sleep, dress, need of sanitation in the dwelling-house, the cause and the prevention of common infections. A chapter is devoted to pointing out the evils of early marriage and the evils of marriages between persons of unequal age, which the author considers to be only too prevalent in India. When we consider the great ignorance which our author shows to prevail in Indian households on elementary hygiene, nursing and on infectious diseases, we can only hope that this useful and practical little book will have a wide sale among those for whom it has been written.

The British Guiana Medical Annual for 1912
Edited by DR K. S. WISE, Letchworth, 1913

THIS is the 19th year of issue of the British Guiana Medical Annual and it is edited by Dr K. S. Wise, M.D. (Lond.). There are several

* From the Religious Tract Society, Lahore, or Rama Krishna & Sons, Booksellers, Lahore. Price, 8 annas.

good papers in this Annual which is, however, issued somewhat late in the year (December 1913).

We may specially mention the article on dysentery and emetine by Dr F E Field. Dr Rowland has a useful statistical article on enteric fever in Georgetown Public Hospital. The case mortality was 21 4 per cent and the incidence was 1 4 cases per 1,000 of the population of the Colony, in England it is given as 0 05 per 1,000 and in Belfast at only 0 05 per 1,000. This article is very completely illustrated by charts, spot maps, etc.

Doctor Wise has a very complete résumé of the subject of Gianuloma Pudendi and its parasite, a disease well-known in India but especially familiar to practitioners in British Guiana. A useful note on the presence of spirochaetes in this affection is given. Kenneth Macleod described this affection in these columns as long ago as 1882.

The Hon'ble Surgeon-General J E. Godfrey has an article on Tuberculosis, a disease which in the Colony as elsewhere occupies a leading place in the statistics of mortality. Among the blacks its prevalence dates from their emancipation in the "forties." This whole paper deserves perusal.

Dr E. P Minett, the Assistant Government Medical Officer of Health, gives an up-to-date account of views of the causes of enteric fever. Dr. Rowland and Dr Field have an interesting article on analysis of 55 cases treated by the open Iodine method. Other articles of interest are on dermal Leishmaniasis or pinta, dystocia, acromegaly and multiple neuritis complicating paratyphoid fever, pellagra, pituitary extract, &c.

The whole volume is of interest, and we hope it will continue to be issued regularly as an annual.

Muller's Serodiagnostic Methods.—Authorised translation from the third German edition by Ross C WHITMAN, M D Philadelphia and London J B Lippincott Company, 1913. Price, six shillings nett.

This little book gives, in addition to a translation of the contents of the third edition of Muller's work, an account of some of the newer methods that have been devised since 1910, when that edition appeared. Also we have some "tips" given by Dr Whitman. But he has not thought fit to indicate his opinion as to which of several methods of carrying out a test is the best, and this is, in our view, a pity for not a few "modifications" of well-known tests that have been given to the world have not stood the strain of experience, whatever their proud originators may think.

Dr Whitman has omitted all mention of Noguchi's modification of the Wassermann reaction "at the request of its author," to whom our thanks are due for avoiding publicity in this way.

Those who know little of serological work will here find much that will interest them, those

who do this work will find much with which they cannot agree.

Had Dr Whitman added some account of Abderhalden's tests, this book would have been even better value than it is for the small price asked for it.

Practical Pathology—By J MILLER, M D A. & C Black Cr 8vo 7s 6d Edinburgh Medical Series

This book well deserves its name, it is thoroughly practical. It includes morbid anatomy and *post-mortem* technique. It deals with fixing, staining and mounting specimens and moreover contains an atlas of 49 plates, showing most of the important points in making a "*post-mortem*" examination and typical pictures of morbid appearances, which are extremely well reproduced. There is a very valuable chapter on "medico-legal *post-mortems*" which will appeal especially to the Civil Surgeon in India. There is a very useful appendix of some 55 pages, full of information as to fixatives, mounting fluids, embedding, decalcification, staining methods, examination of the blood, contents of sacs, pus, serum, etc.

This is one of the most thorough and practical books we have ever met and can be confidently recommended.

International Clinics, Vol III, Thirty third Series—J B Lippincott Co.

In this volume there are two papers specially concerned with tropical medicine. The first is on "The Prophylaxis and Treatment of Malarial Infection" by Captain Craig of the U S Army Medical Department. He strongly deprecates relying solely on one prophylactic measure and insists on the necessity for using, as far as possible, all available means to the end. Regarding the destruction of mosquito breeding grounds he says, "A flight of a mile is frequently observed, and even a two-mile flight is far from uncommon," and again as regards prophylaxis "One of the most important, and yet one of the most neglected, prophylactic measures against the spread of malarial infection is the discovery and treatment of 'carriers' of the disease." In the choice of a quinine salt he recommends the sulphate for general use by the mouth on account of its cheapness and efficiency, the bi-hydrochloride for hypodermic use on account of its solubility, and the tannate for prophylactic use because, as stated by Celli, it is almost tasteless, is well tolerated by the stomach, is more slowly absorbed and more completely oxidised than any of the other salts of quinine.

The second article is by Major Ashford of the same service, one of the members of the Porto Rico Anæmia Commission and is entitled "A Clinical Study of Uncinariasis and its Treatment." While giving a very full description of the clinical side of the picture, he draws a sharp distinction between "carriers," who form in most countries the majority of those infected, and those

suffering from symptoms. In treatment maleic acid is condemned as useless, beta-naphthol is considered inferior, and eucalyptol absolutely unjustifiable and dangerous, on account of its producing extreme debility, dizziness, dyspnoea and syncope, so that it was found generally necessary to administer stimulants to prevent a fatal result.

On thymol the report is "One or two million doses have been given without fatality, the people taking the drug home with them, and at times undoubtedly taking rum afterwards. It is getting to be rather an unpopular drug in this island, however, as it sometimes causes depression and a good deal of irritation of the bowel, dizziness and burning in the stomach." All of which shows that the experience with a drug in one locality cannot be taken as annulling that in another, for there is no question but that Manson's mixture can be safely given in a jail hospital, and that the out-door treatment of ankylostomiasis is associated with certain difficulties not met with when it is administered to those in a hospital.

Lippincott's New Medical Dictionary.—By H W CATTELL. Freely illustrated, 3rd Edition. Price 21s net. J B Lippincott Co., Philadelphia, and Butterworth & Co., Calcutta.

The United States have produced at least two other fine Medical Dictionaries which we have used with satisfaction for years. We now for the first time see Cattell's new 3rd Edition of Lippincott's Medical Dictionary and have nothing but praise for it. It is wonderfully complete and beautifully got up, clearly printed with a most useful index to find each letter of the alphabet. It has reached three editions in three years—which is surely a test of merit. The 1913 edition is wonderfully up-to-date and includes such new words and expressions as "phlebotomus fever," "anoxic association," "Joly's operation," "thorium X," "automobile knee," "Wilson's disease," "parameiltensis fever," "blue spot," "diatom," &c., &c. The definitions of words is as clear and concise as possible and could not be improved upon.

In orthography the tendency is towards conservatism and we welcome amoebae rather than amebae, following the example set by the United States Pharmacopœia, and alternative spellings are given as *Lachrymal*, *lacrymal*, *lacrimal*, also we no longer find "oxid," "sulfur," but oxide, sulphur, adjectives in such frequent use as eustacian or fallopian are written with lower-case initial letters. The cross references are a useful and distinguishing feature of this volume.

We can thoroughly recommend this Medical Dictionary as thoroughly reliable. It is beautifully bound in flexible morocco and is a useful addition to any medical man's library.

Flies in Relation to Disease—By C S GRAHAM-SMITH, M.D. Cambridge Public Health Series. University Press, 1913.

THIS is one of the earliest volumes of the new Public Health Series issued by the Cambridge

University Press. If the other volumes promised reach the high level of the present one the series will be remarkable and successful. The present volume, by Dr. Graham Smith, the University Lecturer in Hygiene, and one of the general editors of the series, contains a very full and complete account of the non-blood-sucking or non-biting flies as contrasted with the blood-suckers like the tsetse fly and the mosquito.

Much work still remains to be done, but it is established that many non-biting flies often walk over and feed upon decaying matter and excreta of all sorts and that flies can and do carry bacteria-infected food.

The earlier chapters of this book of 285 pages are devoted to the life-history and habits of common flies and especially to *M. domestica*, one of the greatest offenders, to which Howard has given the title of the "typhoid fly." Its Indian but closely allied variety is called *M. domestica*, subsp. *determinata*, and its breeding habits are very similar to the English housefly. Another Indian variety is *M. entemata* (Bigot), very like *M. domestica*, specimens of which have been obtained from a hospital ward at Benares and it has been bred in human and cow faeces.

The chapters on the life habits of flies are good and of much practical interest and Chapter IX which deals with the ways in which flies carry and distribute bacteria is full of new information.

Chapter XIII deals with flies and typhoid and shows from civil and from military experience the fact that typhoid is communicated by means of flies. Too little has as yet been published showing the close connection between the dysenteries and flies and it is to be desired that more cases showing a definite connection be placed on record. We need not here refer to the known connection between flies and summer diarrhoea and with Tuberculosis or anthrax. The close connection between flies and cholera is well-known, but since the observations of R. Macrae at Gya in 1894 and of W. J. Buchanan at Burdwan in 1897, no very clear cases of the connection between flies and cholera have been published. Both these cases are quoted in this book and it is desirable that more such be put on record. There is a good and complete chapter on Myiasis, a subject of considerable interest in India where cases are not uncommon.

The volume is very well illustrated, and elegantly printed. The index is good and a very complete bibliography is appended. We can strongly recommend this up-to-date and practical book to a large variety of readers. The price is 10s 6d net.

The Bacteriology of Diphtheria—Edited by G H F. NUTTALL and G S GRAHAM-SMITH. Re-issue with supplementary Bibliography. Cambridge University Press, 1913. 15s net.

We favourably reviewed this valuable summary of the vast literature of diphtheria on its

first appearance The text of the present issue remains the same, but a supplementary bibliography has been added of the most important papers which have since appeared, together with a brief summary of the contents and conclusions when these are not sufficiently indicated in the titles The work is thus brought up to date, and remains the standard book on the subject

Blood-Pressure in General Practice—
By PERCIVAL NICHOLSON J B Lippincott Co
6s net

THIS is a smaller work than that of Faught, but appears to contain the essentials of the subject arranged on very similar lines. In dealing with hypo and hyper-tension respectively, the conditions influencing them are arranged alphabetically. The table of contents is a full one, as is the index, so it is easy to find any point required. It may be recommended as a useful little work for the general practitioner.

The Surgical Clinics—By JOHN MURPHY, M.D.
(At the Mercy Hospital, Chicago)

THIS bi-monthly publication deals with a series of surgical cases seen at the Clinic of Dr. John B. Murphy of Chicago. It is illustrated and each case is dealt with just as it is demonstrated at the Clinic—the history is thoroughly gone into, the case is commented on and the operation described. At the same time allied conditions are discussed.

Those who are not familiar with American Surgery will pick up many useful hints and ideas from such a periodical. Each case is reviewed in a much more interesting and striking way than is the case in ordinary Surgical journals. The price is 35s per annum.

Diseases of Women. Medical and Surgical Gynecology—By CHARLES REED, M.A., M.D.
448 Illustrations Pp 872 Publishers, Appleton & Co

It is not so many years ago in England that the gynecologist was confined to the Lithotomy position, the general surgeon only being allowed to open the abdomen. This humiliating position no longer exists. Therefore it is refreshing to pick up a book written by a great American surgeon and teacher like Dr. Reed who deals with his subject with the broad views of a gynecologist who may in the course of a large field of modern surgery have at any moment to deal in addition with injuries or conditions of kidney, ureter, bladder, rectum, or gut.

This book is, we think, the best that has appeared for a long time. It goes into the detail of modern diagnosis and treatment, and so excellent are the multiple drawings and illustrations that so to speak the knife is placed in the hands of the reader, from step to step of the many operations described. The text covers an enormous operative field, especially valuable being the portions on genito-urinary and rectal surgery, and if we might particularise, that on tuberculous infection

(45 pp) an all-important subject that has met with but scanty attention in English text-books of Gynecology.

The whole book is eminently practical, and will, we feel sure, meet a decided want among practitioners in India who desire a concise and medium sized book for medical or surgical gynecological reference. For example, taking the section on the surgical treatment of goorrhœa, we find given the means and indications for performing posterior colpotomy, with excellent illustrations. In the last chapter there are given very useful details regards incisions, suturing, post-operative treatment and nursing.

The only adverse criticism we have to offer is that we think in a later edition it would be well to limit the number of different operations possible for any one condition, or at least give the operation which for various reasons the author considers best. For example, seven different authors' operations are described and illustrated for the repair of a complete perineal rupture. And again we do not think in a book on gynecology it is necessary to describe obstetric operations such as caesarian section and pubiotomy, nor wise to dismiss vaginal caesarian section in two lines, as futile. These objections, however, are minor, and do not detract from the general excellence of the production.

We note the following printer's errors, page 112, intestinal should read uterine, p 177, uterus for vagina p 387, ovaries for varieties, p 417, reunitive for sensitive, p 427, Wolson for Watson.

A Manual of Obstetrics.—By J. O. POLAK, M.A., M.Sc. 122 Illustrations Pp 426 Publishers, Butterworth & Co., Calcutta

DR. POLAK is to be congratulated on producing a small manual of obstetrics which is both practical and up-to-date without being overburdened with theory. Like most American productions the binding, printing and illustrations are excellent. Dr. Polak begins with a description of the pelvic anatomy of the female and then follows an able section dealing with the subject of embryology. The obstetric teaching is sound and practical and cannot fail to be appreciated by students and post-graduates for whom the book is written. We would wish that further space and more mention had been given to the subject of the toxæmias of pregnancy, for the importance of the work done by Swayne, Williams and hosts of others, on acidosis, and the N to NH₃ ratio is practical and has been generally accepted. However, it is pleasant to see that stress is laid on the importance of the work done by Whitridge Williams on Outlet Pelvimetry, for working with Klein and Williams Pelvimeter we were able to demonstrate 3 years ago the truth and practical deductions arrived at by him, for the women of Bengal. Dr. Polak puts these results and findings very clearly. Stated briefly, Klein and Williams found that 44 per cent of contracted pelvis were due to some degree of

funnel pelvis, and they were able to prove that the obstetrician could in any given case give a prognosis by measuring the distance and marking the ratio between the bischial diameter and the posterior sagittal plane. Dr Polak quotes their figures and these in practice we have verified during the last two years. Those to whom this work is new will be comforted by knowing that many unexpected checks to an expected normal labour, and complete perineal ruptures have been due to minor degrees of unsuspected funnel pelvis.

The section on obstetrical operations is well written and leaves nothing to be desired in conciseness. Pubiotomy is preferred to Symphiotomy. The maternal mortality being in 800 cases collected only 2 per cent.

We can strongly commend this book to all those for whom it is intended.

The Faeces of Children and Adults—By P. J. CANVIDGE, M.D. (Lond.) Publishers, John Wright & Sons, Ltd., Bristol. Pages 156, 13 full-page Plates of which 7 are coloured, and 96 Illustrations in the text.

THIS book deals with the macroscopic and microscopic examination of the faeces, the animal parasites and bacteria found in the same, the chemical examination of fresh and dried faeces, and of calculi and concretions, the diagnostic value of these examinations, and indications for treatment. The chapters on those portions of the subject which the writer has made particularly his own bear the mark of authority and accuracy, and the last chapter and an appendix on diet are valuable and clinically practical. When dealing with animal parasites the author has possibly gone beyond his personal knowledge. The nomenclature is years in arrears. "Amœba coli" is described as the parasitic pathogenic form. Platyhelminths are said to be always hermaphrodite and in describing "*Distomum haematobum*" no suggestion is made as to there being two sexes, indeed, a copy of the stock drawing of the male of this species lying in the gynaecophoric canal of the female is labelled as "*Ankylostomum duodenale copulating*". The semilunar plates of *Necator americanus* are described as dorsal in situation. All these inaccuracies are the more to be regretted in that the figures illustrating this and other sections are for the most part most excellent.

Treatment by Suggestion and Hypnotism—By C. LLOYD TUCKEY, M.D. Sixth Edition Baillière, Tindall & Cox. Pages 424.

DURING the last few years a large amount of literature has appeared on the subject of Psycho-Therapy, we are therefore not surprised to see a fresh edition of Dr Lloyd Tuckey's book, the first edition of which appeared so long ago as 1889. The book is written for the general practitioner who may wish to use Hypnosis, therefore a great deal of space and detail is given

as to the various methods of applying it in any given case.

For this reason, and because the case against Suggestion treatment has been deliberately and honestly faced and dealt with, we can cordially commend the book to medical men.

However, in our opinion the value of the present edition has been greatly enhanced by the inclusion of a chapter on Psychoanalysis by Dr Constance Long. For there can be no doubt that the medical schools of Great Britain have been slow to appreciate the value of the researches of Professor Sigmund Freud in the treatment of those Psycho-Pathological conditions which are so constantly being met with in everyday practice. We only wish that Dr Long had had more space at her command for she has written with enthusiasm, and deals with the purpose of dream analysis, free association, repression in their relationship to psycho-analysis, both briefly and clearly.

Dr Lloyd Tuckey, we judge, has come to the conclusion, that although the methods of Freud may in the near future take the place of those of Laébault, and more particularly in the elucidation of obstetric cases, yet there is still ample opportunity and room for the practice of the easier method, either alone or in combination with psycho-analysis.

Radium Its Physics and Therapeutics—By DAWSON TURNER, M.D. 2nd edition, revised and enlarged. Pp. xiv + 170 with 89 plates and figures in the text. Crown octavo. Price 5s. net. Publishers Baillière, Tindall and Cox, London.

THE advances in the knowledge of the therapeutics of radium during the past three years have necessitated the publication of a second edition of this small manual. This is particularly the case in the treatment of malignant disease, the sections on which have been enlarged and now occupy about one third of the book. The author quotes largely from the work of many eminent authorities and the value of the work is thus considerably enhanced. Radium-therapy can hardly be said to be even in its infancy in India, and for this very reason we welcome the publication of an up-to-date manual in a concise and convenient form, which should be in the hands of every practitioner. The more widely such knowledge is spread amongst the profession, the sooner will the day arrive when public opinion backed by the medical profession will demand a radium-institute in this country. Until that day arrives practitioners can only equip themselves to advise their patients as to the utility of seeking treatment in Europe, and this they can do by a careful study of this work. The type is clear, the illustrations excellent, and there is a good index. The publishers are to be congratulated on their share in the volume.

Serofulosis—By Professor Dr G CORNET.
Translated from the 2nd German Edition by J E. Bullock, M.D., German Tuberculosis Classics. Publishers in India, Butterworth & Co, Ltd, Calcutta

THIS most excellent translation is of much importance to the student of tuberculosis. Serofulosis is defined as comprising a complex of symptoms almost entirely confined to early life and distinguished by persistency, recurrence and multiplicity. Two forms are described (1) tuberculosis due to the tubercle bacillus, (2) non-tuberculosis or pyogenesis form caused by other bacteria. A third or mixed form may be added. All tuberculo-serofulous affections are referred to the bovine variety of bacillus and the author draws comfort from this in that this variety is less pathological than the human type.

The predisposition in the young which allows the infections which give rise to both the pyogenesis and tuberculous varieties of serofulosis is ascribed to a greater permeability of the skin and mucous membranes in childhood which leads to a local readiness for disease confined to the skin, mucous membranes and lymph systems, organs which are attacked in serofulosis. The somewhat vague conditions described as inflammatory diathesis, exudation diathesis and lymphatism are discussed and laid on one side.

Considerable stress is laid on the "law of localization" in which it is laid down that bacilli which have entered the body develop immediately at the point of entry or at least in the lymph glands nearest, and that the further spread takes place step by step so that the path of entry may almost always be correctly sought for in the peripheral region of the gland or organ in which the disease is the oldest. For the genesis of the tuberculosis, its mode and path of infection and its prophylaxis, all of which are here discussed fully and clearly, this law of localization is of fundamental importance. Under the question of the infectiousness of serofulosis, the danger of spread is pointed out in the case of the tuberculous variety where secretions exist, at the same time attention is drawn to the practical impossibility of passing in tuberculous disease in the operation of vaccination against small-pox. Cornet's conclusions on the hereditary tendency to tuberculosis are that it is probably non-existent, while the rare cases of congenital tuberculosis all die an early death. As regards a tendency to serofulosis being hereditary, this is allowed as being an anatomical peculiarity, but is considered non-proven.

Chapters on factors forming infection, morbid anatomy, symptoms, diagnosis, prophylaxis and therapeutics followed by a bibliography of some 1,800 authors with their works on the subject under discussion, make up a book filled with careful reasoning and deductions of facts culled from extensive observations and research and exhibits to the tuberculosis worker a mine of instruction and information worthy of the most careful study.

SPECIAL ARTICLE

I

THE BOMBAY TROPICAL SCHOOL SCHEME

IN our last issue we very briefly referred to the proposal recently announced to the public for the foundation of a school of Tropical Medicine in Bombay on lines not greatly differing from that proposed for Calcutta, the foundation stone of which was laid in February last.

There will, no doubt, be considerable difference of opinion as to the need for two such new institutions in India, but it must be admitted that if these institutions are intended to teach post-graduate work, there should be ample room for one such for Western India and one for Eastern India.

Before going further we must give some account of Major Glen Liston's proposals. The scheme, though in the month of March 1914 it became suddenly known to the public, really dates back to the middle of 1911 and in a letter to Government, dated 6th July 1911, Major Glen Liston laid his proposals in considerable detail before Government. He began by pointing out how the well known Bombay Bacteriological Laboratory had developed from the Plague Laboratory, opened by Mr Haffkine, a few days after the official recognition of plague in Bombay, on 8th October 1896. It began humbly in temporary quarters in Mazagon, but in 1899 it was transferred and occupied the premises of old Government House, Bombay, at Parel. For a long time this institution was more than busy with the manufacture of anti-plague vaccine or Haffkine's prophylactic. In 1901 further advance was proposed—a Central Research Laboratory—but the unfortunate Mulkowal disaster (to which we need not further refer) had a necessary depressing effect and the Institute was kept busy by administrative changes and improvement in methods so as to render the recurrence of such a tragedy as the Mulkowal case an impossibility.

Soon other work began to be taken up and though plague research and plague prophylactic preparation had always been a very important portion of the work of the laboratory, yet as time went on every year saw more and more scientific investigations undertaken by the Laboratory, and as Major Liston says it has "gradually usurped the functions of the Central Research Institute," and this thesis he elaborated in a further communication to Government (dated 31st July 1911).

We are not aware to what extent the Government of Bombay were impressed by the somewhat commercial, if impressive, details given of the mil-

tions of doses of vaccine prepared, the thousands of needles, plungers and syringes supplied by the Laboratory, more solid matter for satisfaction is found in the same letter when Major Liston tells of the number of blood slides and tumours examined, of the training of sub-assistant surgeons, and of the assistance rendered to various enquiries, on malaria, leprosy, oriental sore, etc. Here he definitely asked for the conversion of the Laboratory into a Tropical School and for the association with it of the proposed King Edward Memorial Hospital, "thus affording facilities for post-graduate training and specially a means for acquiring a diploma in Public Health and Tropical Medicine more suited to the needs of this country than at present obtainable in India."

A few days later, 5th August 1911, Major Glen Liston followed up with another letter to Government in which he elaborated his claim that the Laboratory was, in fact, the Central Research Institute in India and discussed the plans of the Bombay Improvement Trust in relation to the land required for the development of the Laboratory and the site of the proposed King Edward Hospital.

Major Liston's earnest appeals did not fall upon deaf ears, the Government of Bombay soon responded and called (16th Oct 1911) for "a detailed scheme for the establishment of a school of Tropical Medicine in Bombay in connection with the Bombay Bacteriological Laboratory and the King Edward Memorial Hospital," and shortly after, 17th January 1912, the Bombay Government addressed the Government of India. In this letter they point out that there is no adequate provision for post-graduate training and even ventured the opinion that the "independent medical profession" (blessed phrase) were suffering from "a low standard of professional knowledge" owing to the lack of such opportunity. They forcibly pointed out the necessity for the special training of "a class of competent natives of India" in sanitation and finally declared their opinion that a school of Tropical Medicine was a necessary adjunct to the existing medical institutions, not only to provide post-graduate study but to afford facilities for research work in the pathology and aetiology of tropical diseases, they also stated that it was probable that the King Edward Memorial Committee would place their hospital, when built, under Government control and attach it to the proposed school of Tropical Medicine. It was clearly recognised that a closer connection with a Clinical Hospital was necessary than could be afforded to the Laboratory at Parel by medical institutions some miles away in the Fort and in this respect it appears that the King Edward Memorial Hospital, by attaching itself to the new school, will become an admirable memorial of the great King who enunciated the battle cry of advancing sanitation. "If preventable, why not prevented?"

In commending this great scheme to the Government of India, emphasis was laid on the

imperial rather than provincial nature of the proposals and it was hoped the Government of India would contribute accordingly.

In June 1912 Surgeon-General Stevenson wrote to Government forwarding Major Glen Liston's proposals about the school and the staff thereof. Major Liston's letter dated 9th May 1912 in an able and masterly way deals very fully with the constitution, aim and objects of the proposed school.

The first four paragraphs deal with the important subject of reasons for establishing the "post-graduate school of Tropical Medicine and Hygiene" at Parel. In the forefront is put the necessity for post-graduate work, especially in laboratory technique, as medical men have hitherto to depend on themselves and in most places are far from any laboratory to assist them. Finally in view of Government's declared policy to promote sanitation it was imperative that adequate provision be given for "instruction in such subjects as bacteriology and public hygiene." Major Liston then discussed the site of the proposed school and showed the advantages of having the great laboratory at Parel ready to hand, and the need of the King Edward Memorial Hospital close by which is to contain 200 or 300 patients. Moreover, close to Parel is the Veterinary College, the Vaccine Depôt, the Aithui Road and Maratha Plague Hospitals, and the Acworth Lepel Asylum. An additional advantage is urged in thus separating post-graduates from the juniors in the regular school at the Grant College.

Major Glen Liston here clearly states the objects of the school —

1. The object of the school will be to afford post-graduate medical instruction especially in laboratory technique and clinical pathology. The school will train Indian graduates desirous of taking the degree of Bachelor of Hygiene of Bombay University.

2. The staff of the school will conduct, assist and encourage investigations in Hygiene and Medicine; they will make inquiries into the nature and causes of disease and the methods of its prevention and treatment.

3. The staff will endeavour to popularise knowledge relating to the preservation of the Public Health and improved treatment of disease.

The minimum staff required for a school of this kind is also stated, viz —

1. Principal of the school, Prof of Bacteriology and Medicine, and Director of the Laboratory

2. Prof of Pathology (and Asst Director).

3. Prof of Helminthology

4. Prof of Chemistry and Examiner under Food and Drugs Act.

5. Prof of Entomology.

6. Prof of Protozoology

7. Prof of Public Health (who might be the Health Officer of the City or his 1st Assistant)

The multifarious duties above imposed upon the head of the school will, it is proposed, be relieved by the appointment of a business manager for office, &c., work, a very necessary

matter. We cannot here follow Major Liston in his eloquent appeal for each of these appointments. If the school is to exist it cannot exist with less. The main point to observe is that the three principal officers get only allowances, 300, 300, and 200, in addition to their present pay as members of the laboratory staff. The Prof. of Chemistry was offered 800—70—Rs 1,500, the Entomologist was to get 800—50—1,000, and the Protozoologist the same, these being whole-time officers.

The Professor of Public Health is down for a Rs 200 allowance and 4 assistants to Professors of Bacteriology, Chemistry, Entomology and Protozoology are marked for Rs 200 or Rs 100 pay. The total cost of the staff as thus described amounts to only about Rs 70,000 per annum in addition to the present pay of the three chief members of the laboratory staff.

We need not follow Major Liston in his description of the many changes needed in the old buildings at Parel. The Government of Bombay have already recognised the need of improvements by sanctioning a 2 lakh estimate for thorough repair.*

Major Liston proposes that "all students attending the school should be graduates of a recognised University," and that at first their number should be limited to twenty-five.

The paragraphs in this letter on the course of instruction are very interesting. They should, writes Major Glen Liston, be "mainly, if not altogether, practical" with additional lectures on the lines of the Bradshaw or Milioy lectureships, by distinguished men in India.

The syllabus has been drawn up on the basis of the requirements of the Bombay University for the degree of Bachelor of Hygiene. The details of the syllabus make a formidable list of no less than 100 subjects which vary from blood examinations to snake poison, from opsonins to preserved foods, from antiseptics to actinomycosis—a comprehensive course which thus stated, is enough to frighten rather than attract the most advancing and energetic of post-graduates. The course of study is from 8 A.M. to 1 P.M. and afternoon work also. The session only October to April, the professors will devote the vacation time to research and to certain advanced courses. In September 1912 we find the Government of India writing that they find it impossible "apart from other similar proposals" to agree with the request of the Government of Bombay to look upon this scheme as "a matter of imperial rather than provincial concern."

We need hardly follow the Surgeon-General and Major Liston in their letter of September 1912. By various "adjustments," the nominal cost of the school, or the amount which it is considered should fairly be debited against the new scheme, is reduced to Rs 23,000 per annum and no

one a penny the worse, except that the pay of a Protozoologist is omitted. This is the scheme submitted to the Government of India in February 1913 and to this the Government of India replied on 18th December 1913—

"2 With the objects which the Governor in Council has in view in initiating a curriculum of this character the Government of India are in full sympathy, and they admit that, given the present stage of development of medical education and institutions in the Bombay Presidency, the opening of a school of this description at which higher instruction could be imparted is a step in advance which can be fully justified, and which is in fact essential if the local facilities for medical training are to be complete. Moreover, looking to the efforts now being made for the advancement of sanitation, the opportunities for instruction in hygiene and public health which the school would afford, become of the utmost importance, since the study of tropical diseases and their causation and prevention is an essential part of the equipment of a sanitary officer. As the local Government is aware, a School of Tropical Medicine is under construction at Calcutta, but the need of more than one such centre is readily recognised. For all these reasons the Government of India will be glad to see the scheme brought to a successful completion."

"3 To the suggestion, however, that the Imperial Government should create an endowment fund towards the recurring cost of the new school they are unable to agree. In the case of the corresponding project in Calcutta, the Governor General in Council has agreed to a grant in aid of Rs 5 lakhs, which will meet in greater part the initial cost of the school, apart from the Biological Laboratory which is to be combined with it, but it has been distinctly stipulated that all recurring expenditure will be Provincial, and from that principle he is unable to recede in the case of Bombay. Towards the non-recurring expenditure of buildings and equipment the Government of India would not be averse from giving help of moderate amount, should the educational grants at their disposal permit of this course, which at the moment they do not, but information as to the extent and nature of outlay of this description is not available. Your letter of the 24th February, 1913, speaks of the disposition of the buildings as not yet finally decided, and it is not known whether progress has since been made. In any case until the local Government has prepared its plans and estimates and is in a position to communicate them, the Government of India can go no further than to observe that when these are received (assuming that the Governor in Council is prepared to meet any balance of the initial expenditure and the recurring cost in a satisfactory manner), the question of a reasonable grant in aid will receive their sympathetic consideration."

"4 As regards the expenses of upkeep and the details of the staff to be employed, the Government of India regret the decision to omit the chairs of Entomology and Protozoology (together with the assistant professors) for whom Major Liston asked on grounds which appear to be sound. Many of the protozoa live on* parasites of other animals, and, as such, may be the cause of dangerous diseases and epidemics in man. Protozoology is therefore nearly, if not quite, as important in medical science as Bacteriology, while the study of Entomology, intimately connected as it is with the etiology of malaria, dengue, yellow fever, plague, kala azar, relapsing and typhus fevers, etc., ranks as of first importance. The omission of tuition in these subjects can scarcely fail to detract from the efficiency of the school and the value of its diploma, and it would be advantageous if the point could be reconsidered."

"5 Whilst unaware of the practical possibilities of suggestion, the Government of India would mention

* In our next issue we hope to give the plans for the new Laboratory and Hospital, which we have just received.—ED.

* Sic fas

for the consideration of the Governor in Council that they have learned that Sir D. Tata recently was anxious that two professional chairs (now vacant) at the Indian Institute of Science, Bangalore, should be utilised for medical research, which cannot be conveniently combined, on the other hand, with the technical education with which that institute is now concerned. If any such endowment could be combined with the School of Tropical Medicine, it might ease the financial position.'

II

SURGERY AT THE RANGOON GENERAL HOSPITAL

This is the fourth annual report on the operative work done in the Rangoon General Hospital. It is to be regretted that the medical side of the work of this great hospital is not represented, but "until the hospital staff is strengthened this will be impossible." The new clinical laboratory is a valuable and necessary addition to the hospital.

As our pages have frequently shown, there is much good surgical work done in this hospital and in this report we find a total of 5,421 operations of all descriptions, which include 136 tumours and cysts, 291 fractures, 110 on the rectum and anus, abdominal operations 312, gynaecological abdominal 148, general 78, 503 eye operations 786 genito-urinary. Turning to the tables, we find 53 articular or joint operations not counting dislocations, 42 operations for compound fractures, 5 laminectomies for fractured spine, 21 tracheotomies, 7 hæmorrhoids, 35 amputations, 4 tracheotomies, 61 operations for piles of which 54 were done by ligation and excision, 397 circumcisions for phimosis, 9 for elephantiasis (showing comparative rarity of the disease), haematocele 21, hydrocele in all 330 cases (eversion of sac 214, excision 3, hydroangioplasty 2, chylous 2, etc.), for stone in bladder, a rare complaint in Burma, only 11 cases (6 supra-pubic).

We need not again refer to the account of the treatment of fractures of the skull as we have recently published an account of the work done in this connection in Rangoon.

The chapter on fractures is full of information, massage and early movements being the ordinary treatment, but the treatment of Pott's fracture by massage without splints was a failure because the patients would attempt to walk too early.

Lane's plates or wires were successfully used on 12 cases. Lt-Col Bury has an interesting note on 7 cases of aneurism treated surgically by ligature.

Major Peter Dee has a useful note on the rarity of operations for stone in the bladder. He thinks it largely a question of water supply, but if he will refer to Major A. E. Robert's paper in the *Transactions of the First Medical Congress in Calcutta* in 1894, he will find a theory which still holds the field. Speaking broadly, the rice-eating area have little or no stone, in areas where wheat and such cereals are eaten stone is common and

where (as in Behar) rice and wheat are both eaten stone is fairly prevalent. The metabolism of food stuff in relation to stone is a subject started by Major A. E. Roberts, I.M.S. (ret'd) which still needs the attention of our workers.

Major Dee writes as follows —

From replies which Civil Surgeons from practically all over the province sent to my enquiries, I gather that the average number of operations done in any one year is about four to five in the mossoor hospitals, and about ten cases a year in the General Hospital, Rangoon. I must confess that the small figures surprise me as I was under the impression that I had done an average of 10—12 cases a year in both the Barsein and Mandalay Hospitals, but I can only presume I was mistaken. The mortality for supra pubic and lateral lithotomy cases as calculated for the past four years in the Rangoon General Hospital reached the appalling figure of 38 per cent.

My own mortality as far as my recollection goes is confined to one case in which the peritoneal cavity of a child was opened by accident, and though immediately saturated death from septic peritonitis occurred I think that death in the above case was due to the fact that a large stone was removed through a comparatively small opening, and that in the act peritoneal sutures were either stretched or torn.

I have looked on the supra pubic operations as a perfectly safe and comparatively easy one, the only objection to it being that it means a stay of six weeks in hospital and a time of great discomfort for the patient unless good and careful nursing is available. Thirty eight per cent. mortality absolutely astonished me, and I proceeded to hunt up some records.

At the Mayo Hospital, Jaipur, in a series of 416 cases the mortality of those operated on by the supra-pubic method was 33 per cent.

In the Punjab between the years 1890—95 the death-rate after the supra pubic operation was 42.17 per cent and after the lateral operation 11 per cent.

Litholapaxy operations show a mortality of about 2 per cent—3 per cent.

Though I have operated by all methods, still the greater number of my cases were done by the supra-pubic operation, and I can only imagine that my small mortality was due to the fact that I was operating on otherwise healthy subjects, also I am only speaking from memory. Operations for stone have to be done without delay as patients will not wait in hospital while the bladder and kidneys are being got into a healthy condition. But even allowing for the fact that many of the cases are suffering from cystitis and even pyelitis, it seems almost impossible to explain why a supra pubic lithotomy should be such a deadly operation.

(2) The second theory is that, though the disease exists to a certain extent it is rare, not alone as compared with what may be called "The stone areas of India," but even as compared with Madras.

Those who hold the second theory agree, and I think with justice, that if people come freely to hospital for all other kinds of operations, they would certainly come if suffering from such a very painful and crippling disease as stone is. In India people do not hesitate to be operated on, and there is really no reason why they should do so in Burma.

I was under the impression that the first view was the more correct one until I undertook to write this short article, but the information which I have now obtained has caused me to change my views. At the same time I feel pretty certain that if litholapaxy was the operation of choice in Burma, and the mortality after stone operations was smaller, we should see more cases in our hospitals.

The actual cause of stone we do not know, but the parts of India in which it is very common (the Punjab, etc.) are characterized by a long dry hot weather during which the heat is intense, and by a very small rainfall.

In Madras these conditions do not occur, and the number of cases of stone in the Punjab is about 88 times greater than in Madras. In the Punjab during the hot weather drinking water becomes very scarce, and even in parts of Madras there is a scarcity of water during the dry weather, and it is thought the stone is possibly due to this. Sufficient water is not available to wash out the kidneys properly, and this combined with the great evaporation from the skin leads to concentration of the urine and deposits of urinary salts.

The above theory is borne out by the very certain fact that stone is uncommon amongst the jail population even in the stone areas, owing, it is supposed, to the fact that jails are well supplied with water. In certain parts of the Bombay Presidency efforts have been made to supply towns and rural areas with artesian wells, and I am told that since the water supply has been improved the cases of stone in the bladder have sensibly diminished.

Now if the above theories possess anything of truth, it is easy to understand why stone should be uncommon in Burma. Burma is perhaps the most magnificently watered country in the east. From north to south it is traversed by great rivers, the Irrawaddy, Chindwin, Salween, etc., and even in the dry zone there is never any real scarcity of water.

Under ordinary circumstances one would imagine that crushing the stone was the more severe operation of the two. Then again removal of the prostate by the supra pubic route is followed by a very much lower mortality though a more severe operation in itself, and usually done on more or less unhealthy subjects. Finally, given that the patient has got cystitis, one would imagine that for an immediate operation the supra pubic one was the ideal method, as it allows of drainage and irrigation of the bladder.

I cannot explain in any way why the supra pubic operation should give rise to such a high mortality, but the fact remains that it does, and that it has been universally condemned by practically every experienced surgeon in the Punjab. As it is the favourite operation in Burma, and as other surgeons may have, and probably still hold, the very erroneous view that I held about it, viz., that it is a perfectly safe operation, I feel that though our opportunities may be small, we should endeavour in future to crush stones and avoid cutting operations, except when for certain reasons the latter procedure is unavoidable.

I may mention that Lt.-Colonel Smith, I.M.S., states that he gave up the supra pubic route for removal of the prostate gland and went back to the perineal method. He does not state exactly why, but from the context of his article, one presumes that he had a high mortality after supra-pubic operations.

What the actual cause of death after the supra pubic operation is, no one appears to have stated."

Abdominal operations are always, as it were, a measure of the surgery of a big hospital and in this respect we find the Rangoon Hospital well to the front, we see there were 39 operations for appendicitis, and 2 of appendicostomy "for acute bacillary dysentery," 97 operations for hernia, and 32 for strangulated hernia, 9 for intestinal obstruction, 10 gastrostomies, 4 for tubercular cæcum, 17 liver abscesses drained and 1 aspirated, 8 operations for cirrhosis of the liver, 12 for general peritonitis, 19 for penetrating wounds of the abdomen, 5 laparotomies, 14 for abdominal abscesses, and 24 exploratory laparotomies for various reasons. Major A. Fenton, I.M.S., writes short accounts of some cases, and Lieutenant-Colonel Barry gives details of many more.

We have already published an account of the many cases of pelvic suppuration operated on by

Lieutenant-Colonel Barry—but we may here quote his summary—

"1. Hysterectomy is to be recommended as a means of simplifying operative measures in very complicated and difficult cases of pyosalpinx, since by enabling a complete removal of the diseased parts it ensues more satisfactory after results.

2. In cases of suppurative disease of the fallopian tubes due to venereal infection hysterectomy does not increase the danger of the necessary operative measures.

In similar cases due to puerperal infection hysterectomy does materially increase the danger of the operation. This danger is due to the lasting virulence of the primary infection and removal of the uterus should only be undertaken when the difficulties of the operation permit of no other course.

The above restrictions should also be observed in cases of pyosalpinx which being intimately adherent to the intestine have become infected by intestinal bacteria.

In cases due to venereal infection supra vaginal hysterectomy has given good results and is in these cases generally preferable to pan-hysterectomy since it leaves the pelvic floor in a more efficient condition.

If both ovaries are removed or have been completely disorganized, the supra-vaginal hysterectomy should include the whole body of the uterus.

Where it is possible to preserve one or both ovaries and in cases due to venereal infection in young women, it is advisable to amputate the uterus a short distance above the cervix so that the menstrual function is not wholly abolished.

In cases of puerperal infection, if hysterectomy is performed the whole of the body of the uterus should be removed on account of the lasting nature of the primary infection.

When performing supra vaginal hysterectomy the cervical stump and its canal should be disinfected with iodine or pure carbolic to destroy any infective material and thus to guard against danger of subsequent septic thrombosis and pulmonary embolism.

In all operations performed on the fallopian tubes or uterus for affections arising from puerperal infection it is advisable to drain by a stab puncture through the abdomen for 36 hours."

The following account of what is now called Morphia Injector's Septicæmia is worth reporting in full. It is based on 52 cases.

This infection was first reported in the *Indian Medical Gazette* of July 1912 and a fuller report with a list of cases appeared in the *Journal of Hygiene* of April 1913. During the year under review 53 cases of the infection have been discovered, the attached list gives in tabulated form brief records of 52 of the cases. One case returned as the infection has been omitted as the record of the case was unsatisfactory.

Up to the present our observations have been directed mainly to the demonstration that the infection was a definite one, and the cause of easily recognisable and distinct lesions in the infected persons. The results so far published seem to us to place these points beyond doubt, and our subsequent experience of the disease has in nowise modified these chief conclusions, but the further cases here recorded modify our first conclusion in certain minor points. Of the 52 cases, only 6 were entirely free from the marks of morphine injections, this high proportion of morphine injectors, evident in our first series of cases and now continued through a larger series, does compel the suggestion that the disease is very definitely connected with this habit. We had been rather loth to adopt this view upon statistical evidence only unsupported by some bacteriological proof and we supposed that the high proportion of morphine injectors might be explained by the classes of patients upon whom a post mortem examination is permitted in the East, but this hypothesis seems now to be untenable.

Among the pauper bodies picked up in the streets during the year the Hindu non morphia injectors form 529, the Burmese and Chinese, usually morphin takers, 39 per cent only. Therefore at present we incline to the opinion that the infection has some very direct connection with morphia injecting and might well be called Morphia Injectors' disease or Septicæmia. Of course, the most obvious connection of the disease with this habit of drug injecting would be direct infection by means of the injections. Material was collected from one or two of the morphin dens in the town and an endeavour made to isolate the bacilli from the fluids and syringes used, but without success. We hope to collect more material and make further experiments, but during this first year we have been hampered by a failure to maintain a stock of guinea pigs—animals whose susceptibility to the infection provides a very convenient means of isolating the bacillus from amid other organisms.

In addition to this attempt to isolate the bacilli from the material and instruments used in the morphin dens, we have taken cultures from the subcutaneous tissues of the injected veins and from the neighbouring lymphatic glands in several cases. In cultures from the subcutaneous tissues we have not yet succeeded in growing the bacilli, but upon two occasions we have grown them from the lymphatic glands draining the injected veins. These two positive results are important and lend support to the view that after all infection may take place directly by means of the morphia injections, for although in a great many cases the infection is a septicæmic one, yet as a rule the lymph glands are spared, therefore it seems probable that in the two cases from whose growing glands we obtained vigorous cultures of the bacilli, these bacilli had been carried to the glands, not in small numbers by the blood stream, but in large number directly by means of the lymphatic vessels draining the neighbouring injected subcutaneous tissues. However, I confess that these two successful searches do not outweigh the negative result of cultures from both subcutaneous tissues and lymphatic glands, and that the enticing hypothesis of direct infection by the morphia injections has as yet the weight of evidence against it. More numerous experiments are necessary.

Of the 52 cases recorded 12 have been in-patients in the hospital for a sufficient length of time to have allowed bacteriological examination to have been made during the lifetime of the patients, yet, so far as I am aware, none of the 12 were so investigated. This seems an unnecessary neglect of opportunity, and considering the apparent connection of the disease with morphia injecting, a habit of which the evidence is so striking, I hope that this next year the majority of cases of this disease admitted to hospital an appreciable time before death may be properly investigated by laboratory methods. In this matter of diagnosis we are hopeful that such bacteriological methods as the use of an injection of a solution made similarly to "Mallein" may prove helpful. I am told that such a product was used upon one occasion and that a very striking inflammatory reaction was the result, but no accurate notes of this case are available. Before making wide use of such a method accurately controlled animal experiments are essential.

In order to test the possibility of isolating the bacillus of the disease from material such as sputum and faeces, experiments have been carried out with artificially infected material, and in these experiments we have found no difficulty in separating out the bacillus from the contaminated material.

The only animal experiments performed during the year have been upon two monkeys. While these animals have proved quite resistant to infection by means of contaminated food, subcutaneous inoculations of very small doses have given rise to short illnesses with local suppuration at the sites of injection from which the bacillus was recovered, but no general infection resulted and the experiments have been discontinued owing to

the difficulty of housing and handling those larger animals with our present laboratory facilities. For our future experiments we hope to secure a healthy stock of guinea pigs.

For the ready understanding of the appended list of cases the following brief analysis of the list may be useful—

Among the 52 cases recorded the nationalities of the patients have been—

Burman	Chinese	Mahomedans	Hindus
37	7	5	3

The prevalence of the disease among the Burmese and Chinese corresponds with the fact that it is in the Burmese and Chinese community that the morphia-injecting habit is most widespread. This habit is very rare among the Hindus and it will be noticed that none of the 3 Hindus infected was a morphia injector, while of the 37 Burmese all save one bore evidence of the habit.

Only 4 of the 52 cases were well nourished, the majority were thin, ill nourished persons, picked up dead, or dying, from the streets. This evidence, such as it is, bears out our previous suggestion that the infection is one of low virulence towards men and chiefly attacks the neglected wretches of the town. Additional evidence of this is afforded by the fact that in 10 cases other disease of a chronic debilitating nature was present. 6 of the 10 were suffering from chronic ulceration of the large bowel. Case No. 48 is particularly interesting as an example of the infection of a man of lowered resistance, the patient, a Hindu coolie, had been working in the jungle away from Rangoon, while in the jungle he fell sick with "fever" and came back to Rangoon, for some ten days he wandered homeless and ill about the town, sleeping and eating in the insanitary haunts alone open to a penniless wanderer twenty days after the onset of his fever he was picked up helpless and brought to the hospital by the police, here he was diagnosed typhoid and died after eighteen days. At the post mortem examination typical typhoid ulceration of the small intestine was found, and in addition both lungs contained numerous areas of consolidation characteristic of the morphin injector's infection. Cultures from the mesenteric glands gave a pure growth of *B. Typhosus*, while from the lungs vigorous and pure growths of the bacillus of this other disease were obtained. It seems probable that while in the jungle the man was infected with *B. Typhosus*, and that, while wandering homeless, sick with typhoid in the squalid haunts of Rangoon, this other infection was added. It will be noticed that the man was not a morphia injector.

In 42 cases spleen cultures were taken and gave growths of the bacillus in 36. The 6 negative cases had all extensive lesions in the lungs typical of the infection, so that although cultivation of the organisms from the spleen is usually both possible and easy, it is not invariably so, and should not be depended upon where it is important to prove the existence of the infection. It will be seen by a glance at the list that the lungs are by far the commonest site to show gross evidence of the disease. Obvious microscopic lesions have been present in the—

Lungs	Liver	Kidney	Spleen
37 cases	15 cases	10 cases	6 cases

while in 6 cases there have been no obvious lesions, the presence of the infection being demonstrated by spleen cultures only. Personally I think that upon

more careful examination the spleen would show microscopic evidence of the disease in a larger proportion of cases than is given in this list, but the spleen lesions being generally minute, are easily overlooked.

This further experience of the disease has not led us to modify in any way our previous description of the lesions caused by the infection. Upon the whole the only important change or addition which we wish to put forward in this report is the greater importance which we attribute to morphine injecting as the probable means of infection. Indeed so generally does the infection appear to be associated with this drug habit that we suggest the name of "Morphine injectors' Septicæmia" as a convenient name for the disease.

The above extracts show what a valuable report this is. Why will not the other big hospitals in India follow the example of Madras and Rangoon and publish their work for each year?

ANNUAL REPORTS

SANITARY MADRAS

CAPTAIN JUSTICE, I.M.S., submits the Sanitary Report for Madras during the year 1912. We make the following extracts—

"The machinery employed for the registration of vital statistics both in urban and rural areas and the procedure followed for the collation and tabulation of the results obtained remained much the same during the year under report. Act III of 1899 was in force in 3,558 towns and villages as in the previous year. Registration in rural areas cannot be considered satisfactory, inasmuch as the staff employed is ill-adapted for the purpose. The contemplated general introduction of the new combined scheme of compulsory vaccination and compulsory registration of births and deaths that is being tried in selected districts now will, it is hoped, tend to a better registration of vital statistics. In mafassal municipalities 1,235 prosecutions were instituted for failure to report domestic occurrences, the number resulting in convictions being 1,234. The fines inflicted in these cases amounted to Rs 570."

The following note on MALARIA PREVENTION is of interest—

The special Malaria Officer, Madras (Captain J. H. Horne, I.M.S.), took charge of his new appointment on 15th February 1912 and proceeded soon after to Amritsar and Pusa for training in malaria. He returned to the head quarters at the end of July 1912 and was engaged till the end of the year on a statistical investigation of the Presidency in accordance with G.O. No. 424 L, dated 27th March 1911, for the purpose of ascertaining the malarial conditions in different localities. His report on this investigation has recently been received and will shortly be placed before Government with the remarks of the Malaria Board.

42. The Special Malaria Officer's other work during the year consisted of the following—

(1) A class of instruction for Sub Assistant Surgeons detailed for duty with travelling malaria dispensaries in the Presidency was held by him during November and December 1912.

(2) In December 1912 he also proceeded to Berhampur in the Ganjam district to confer with the District Medical and Sanitary Officer there about malaria in the district in general. While there he did also some investigation work.

"During the year 1912 itinerating malaria dispensaries were on tour in the Godavari Agency tracts. Reports on the working of these dispensaries were received from the District Medical and Sanitary Officer, Godavari, and scrutinized by the Special Malaria Officer who made several suggestions for the successful working of these institutions. A scheme was also drawn up by him containing some general lines in which these dispensaries should in future be worked. The scheme met with the approval of the Malaria Board and is now under the consideration of Government.

Little or no field work was done by the Special Malaria Officer during the year under report as he was otherwise busily engaged. At the instance of the Malaria Board, he is at present conducting malarial investigation work in Wyndham.

Major T. S. Ross, I.M.S., continued to be on special malaria investigation duty in the Presidency during the whole of 1912. He completed his investigations at Ennore and the vicinity and the reports submitted by him show that the results obtained so far from the preventive measures undertaken were gratifying. They also furnish evidence that when the practical measures suggested by him have been completed, malarial fever will completely disappear from the area. The practical measures suggested by Major Ross are estimated to cost Rs 87,000, and towards this the District Board, Chingleput, received a special grant of Rs 28,000 from Government. The balance will shortly be placed at the disposal of the Board. There is very little investigation work to be done at Ennore hereafter. A special staff is on duty there continuing the practical anti-malarial operations started by Major Ross.

CONSERVANCY

Compared with the previous year, there has been an advance in the conservancy arrangement, as shown by the increased staff and plant employed and this is reflected in the air of cleanliness and tidiness on the whole observed by me during my visits to municipalities, although conditions are not all that could be desired. There has been an increase under all heads of the staff except Sanitary Overseers, whose number remains stationary, and the sweepers who show a diminution from 2,613 to 2,428. The latter need not be viewed with apprehension as likely to affect the efficiency of rubbish conservancy, municipalities generally show a tendency to place greater importance on the employment of sweepers for collection of rubbish than upon scavengers for night soil collection and employ an unduly large number of sweepers than circumstances would warrant, very often at the expense, and much to the detriment, of night soil conservancy. The diminished number shown is the result of attention being drawn to this evil tendency and the rectification of errors so as to secure the employment of sweepers in correct proportion to the requirement of the towns concerned. In several of the municipalities, however, the staff is still inadequate and in need of strengthening. The deficiencies have been pointed out in reviewing the annual budget estimates and the attention of the municipal councils has been drawn to the matter.

The increase in the number of Sanitary Inspectors is a satisfactory feature and it is hoped that efforts will be made to still further increase their number so as to ensure their being employed in the proportion laid down in G.O. No. 901 M, dated 9th June 1911, and to pay them according to the scale therein prescribed. The long deferred employment of Health Officers for the supervision of sanitation in the larger municipalities sanctioned in G.O. No. 457 L, dated 14th March 1913, is an important feature of municipal sanitary administration which, I am convinced, will have a most salutary influence on the progress of sanitation in the towns employing them and the effect of this reform will be watched with interest. To make it a success very great care and discrimination will be necessary in

selecting men for the appointments and once selected and appointed clear and definite rules should be drawn up, defining the duties of the Health Officer, and the relationship between himself and the Chairman."

Considerable attention, I am glad to note, is being paid towards remedying the defects noticed in previous years in rubbish and night soil conservancy not only by the employment of increased staff, the provision of more public latrine accommodation and the extension of the private scavenging system but, also by more efficient supervision, the absence of which was the cause of much that was unsatisfactory in the past. There can be no doubt that municipal councils are catching up the spirit of the times and are evincing a greater interest in the matter of sanitation as shown by the ready willingness with which they accept and act up to advice offered as far as funds at disposal permit. Nevertheless, the matters that still do not receive the attention they merit are the sanitation of brickyards, the clearing of places for the manufacture and sale of articles of food and drink and the inspection of food supplies. These I need hardly mention have an important bearing on the public health of towns and the spread of epidemics, etc., and with the employment of Health Officers in the specified municipalities, I trust these subjects will receive increased attention.

Sewage farming was in force in the Municipalities of Berhampur, Chiccale, Vizianagram, Vizagapatam, Anakapille, Rajahmundry, Bezvada, Guntur, Nandyal, Conjeeveram, Kumbakonam, Tanjore, Minnigudi, Negapatam, Dindigul, Periyakulam, Tiruvelly, Palamcottah, Salem, Karur and Ootacamund. Although compared with last year a larger number of municipalities adopted this system of disposing of the town sewage, there was no advance in the method employed which usually consisted of the application of crude sewage to land by broad irrigation. In Ootacamund where elaborate disposal works are in existence and in Berhampur, Salem and Kumbakonam where bacterial filters and septic tank respectively are employed, the sewage is treated before applying it to the land. In Conjeeveram the farm was extended and improved. In other municipalities the sewage was disposed of as reported in previous years, that is, it was either carried in carts or led by drains and discharged into fields, private gardens, vacant spaces, etc., or allowed to flow into streets and backyards and there dry up or soak into the ground. The bacterial filter attached to the drain outlet at Cannanore, referred to in paragraph 64 of the report for 1911, was put out of use as it proved a failure owing to its size not being sufficiently large to deal with the sewage passing through and the sewage is now disposed of on a neighbouring paddy field. I think the Council should have taken advice in the matter and persevered in their attempt at sewage purification rather than abandon it. The crops grown consists of English and country vegetables of sorts, various kinds of grasses, tobacco, plantain, sugarcane, cocoanut, etc., and reports show that these crops thrive on sewage irrigation. Financially, however, sewage farming is a failure. Thus in Bezvada the income was Rs 5 against an expenditure of Rs 178 8-0 and in Vizianagram the expenditure exceeded the income by over Rs 300. In Vizagapatam and Tanjore the farms were worked at a profit, the income derived amounting to Rs 1,776 and Rs 3,405, respectively, which affords evidence of the fact that with care and attention the sewage farms could be worked on much more profitable lines than they are now. I have no information of the results achieved on the farm at Ootacamund.

Sanitary Assistants to District Medical and Sanitary Officers were employed in the districts of North Arcot, South Arcot, Tanjore, Guntur and Godavari, in Chingleput and Madura the appointments were abolished for financial reasons. In other districts sanitary work is absolutely without supervision except in some of the unions where Sanitary Inspectors are employed. The employment of sanitary assistants is sound in

principle and in practice, judging by reports received from them, they have been of considerable service in districts employing them in checking vaccination work and correcting sanitary errors in towns and villages inspected by them, although funds have not always been forthcoming to give effect to the more important of their recommendations. Then extended employment must follow as the logical sequence of the reforms recently inaugurated, for without an intermediate subordinate staff of Sanitary Assistants or District Health Officer, as they should be rightly designated, and then further subdivision into Sanitary Inspectors, the employment of officers alone will be of little practical value. Under present conditions, however, the service is unpopular with Assistant Surgeons, they are practically thrust into the post for a certain term, usually two years, and they seek to leave it at the earliest opportunity for the regular line—an unsatisfactory system which is a hindrance to securing the services of men who have a real liking and aptitude for sanitary work. This is, however, a matter of detail which I trust will be set right sooner or later when their extended employment comes to be considered.

MADRAS SANITATION 'FACILE PRINCEPS'

During the year a steady advance has been made in sanitary progress. While we have reason to be thankful for the advance that is being made, there can be no doubt that advantage should be taken of the improved financial condition of the country to redouble our efforts to improve the sanitation of both rural and urban areas and thereby retain the position that Madras has held in the past, in matters sanitary, *facile princeps* in India.

In addition to scrutinizing the plans and estimates of sanitary schemes submitted by the local bodies in connection with the recurring sanitation grant and of structural works on behalf of the Sanitary Board and organizing the work of the Malaria Board, the special medical officer of which commenced operations in the latter half of the year, I drew the attention of local bodies to sanitary defects brought to notice in the inspection reports of District Medical and Sanitary Officers on towns and villages and in reports on fairs and festivals. Plague and cholera epidemics, the latter especially in pilgrim centres, engaged my special attention and local bodies were freely advised as to the remedial measures to be applied. Considerable difficulty had however been experienced in securing the services of qualified Sanitary Inspectors as promptly as could be desired for epidemic work, due, not to paucity of qualified men, but to the little attraction which sanitary work under present conditions presents to the Sanitary Inspector. It is hoped that the scheme inaugurated in G.O. No. 22 L, dated 3rd January 1912, will greatly minimize our present difficulties in this respect. The utility of employing these men, although viewed with considerable suspicion for a long time, is at last beginning to be recognised as evidenced by the numerous applications I receive from local bodies for the services of Sanitary Inspectors for epidemic and festival duties.

The reorganization of the sanitary service which was an important feature in the sanitary history of the past year could not be given effect to as final orders on the subject had not been received before the close of the year. These have just been received and I have no doubt that the scheme for this Presidency, such as it is, will aid materially in advancing sanitary work by reason of the closer supervision and the division of labour resulting from the appointment of additional officers as also by the more skilled supervision of sanitary work in municipalities employing Health Officers. If this involves additional expenditure on sanitary schemes, that expenditure will be to very good purpose owing to the impetus given to sanitary progress under the altered conditions."

Correspondence

ASINO VACCINE

To the Editor of "THE INDIAN MEDICAL GAZETTE"

SIR.—In your issue of February Dr Hossick contributes an interesting article on asino vaccine, and suggests that Dr Chaumier de Tonis was the original discoverer of the utility of the donkey for rejuvenation of animal vaccine. As the method is not strange to India, I venture to recall certain facts.

Up to 1890 animal vaccination was conducted in the Madras Presidency by vaccinating calves with fresh lymph, and driving them from village to village. Muller's and Dr Collins' (U.S.A.) glycerine method for dilution and preservation (for transport for short distances) was also used. In certain places, however, the procuring of sufficient calves became a matter of difficulty. Colonel O'Hara, I.M.S. (retd.), then Civil Surgeon of Bellary, advocated the use of donkeys, and they were extensively employed in the Bellary District. In my experiments of 1890, in search of an improved strain of vaccine, and its preservation in tropical climates, I employed *retro* vaccination, a method then current, and new vaccines were exploited, before ultimately I resorted to variola vaccine. I tested the donkey, the goat and the buffalo as new soil. The affinity of the donkey to the horse and Jenner's horse pox theory did not escape me, nor some other authority's opinion, whose name I unfortunately forgot, that *retro* vaccine in the horse induced "febrility" of the strain. By December, 1890 there was available a perfectly definite statement in the "British

however, I conducted a series of private experiments with degenerate strains of this and other stocks in reference to rejuvenation. I formed the opinion that temporary benefit only could be secured by *retro* vaccination, and that the correct course was to employ variolation of calves, as described by me in a paper, partly read in my absence, at the Congress of the Royal Institute of Public Health, Berlin, 1912.

I venture the *theory* that the temporary benefit derived by shifting from soil to soil is due to influence on "extaneous organisms," where in accidents of cultivation from calf to calf certain varieties threaten to become predominant.

I am, Sir,

Yours faithfully,

W G KING,

COLONEL, I.M.S. (ret.)

Hitch End, Middlesex

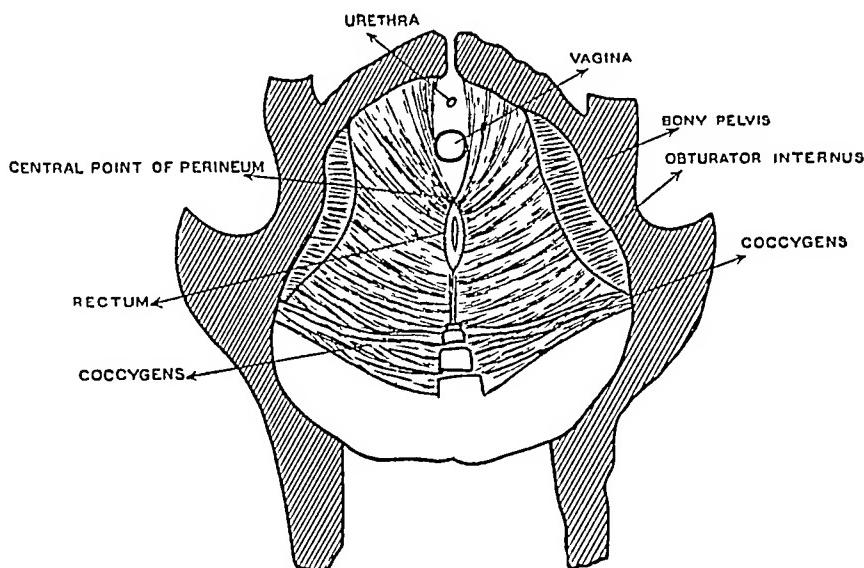
25th February 1914

A SUGGESTION AS TO THE CAUSE OF PROLAPSE OF THE UTERUS

To the Editor of "THE INDIAN MEDICAL GAZETTE"

SIR.—WHILST perusing the article of Captain Green Armstrong on "The use and abuse of Pessaries" in the February number of the *Indian Medical Gazette*, my attention was drawn to his anatomical description of the floor of the Pelvis.

The pelvic floor of course consists only of a muscular sheet, the levator ani and coccygeus muscles—you have structures above it and structures below it, and some of these pass from above to below it.



Medical Journal, page 1441, as follows—"Pench finds (Journal Veterinaire) February 1890, that the vaccine taken from the horse through the calf is much more permanent than is variola that has been passed for a long time back wards and forwards from children to calves. He finds indeed that ordinary human lymph passing from one calf to two then becomes attenuated so rapidly that, in the third or fourth generation, it fails to produce any of the characteristic vaccine symptoms, whilst the horse pox vaccine at the eleventh generation produces pustules as characteristic as those of the first generation."

The opinion I formed of the use of the donkey was that *retro* vaccine did undergo temporary strengthening, so does *retro* vaccine on calves, so probably (for I have no personal experience of the matter) does vaccine on lapines. Finally, I secured my original variola vaccine stock (1891).

My preceding experiments led me to distrust removal from soil to soil, and to place faith in cultivation with selection of strains. Hence, I never allowed my new stock to be mixed, and thus successfully transmitted it from calf to calf in full vigour. On cessation of my period of "special duty," the Mysore Government maintained the stock also unmixed for several years under Dr Palpu, who had been my Senior Assistant in Madras and Bangalore. In 1892,

These latter structures are the rectum, vagina and urethra and they are said to pass from above to below through the "Pelvic Aperture."

One naturally concludes from a description of this sort that all these structures pass through one aperture or opening—but a study of the pelvic floor will at once convince one that this so called pelvic aperture consists of two apertures, through the anterior one the vagina and urethra pass, and through the posterior one the rectum.

These two apertures however are very close together and probably gynaecologists have joined them together for simplicity in description. But yet these apertures are separated by a part of the pelvic floor, and a very important part, e.g., "the central point of the perineum." And it is by injury to this small part of the pelvic floor that I wish to suggest that many of the cases of prolapse occur.

Gynaecologists always describe prolapse as being caused by injury to the pelvic floor, but as to how or where this injury occurs we never receive many details.

In the first place it is, I believe, unusual to find a bad condition of prolapse in a woman who has never borne a child.

The cases of prolapse in the nulliparous are often associated with neurasthenia, loss of flesh—or some debilitating in-

fluences which by causing general muscular weakness will cause slight prolapse, the reason being that the floor of the pelvis, which is muscular, will give way under the weight of its contents which ordinarily should have no effect. When the general health of this class of case is improved the prolapse is also at once improved.

We have then to turn to the women that have borne children for an explanation of why prolapse occurs. If we study the floor of the pelvis we find that it consists of a muscular sheet on each side, the two levator ani muscles—these muscles do not completely close in the floor behind, but the gap is filled up by the coccygeus muscle—but from a gynaecological standpoint this muscle may be ignored, in fact, it only represents the remains of a muscle which was useful in supporting our tails in the days when we lived in trees.

Now let us examine the origin and insertion of this muscle, the Levator Ani.

It is said to arise from—

- (1) post surface of the body of the pubis,
- (2) white line and sacral fascia,
- (3) spine of ischium

e.g., the origin extends horizontally from the post surface of the pubis to the glen sciatic notch ending near the spine of the ischium, where the coccygeus arises, and continues the muscular sheet. Practically it has an origin from more than half the circumference of the pelvis.

Its insertion, as a rule, is described in instalments—

(1) The anterior part, e.g., that part arising from the back of the pubes is inserted into the central point of the perineum.

(2) The part arising from the white line is inserted into the central point of perineum and the rectum.

(3) The fibres from spine of ischium are inserted into anococcygeal sphincter and coccyx.

We do not read that the muscle is inserted into the rectum or vagina but that it encircles them. We presume then that as far as the action of the muscle is concerned it has no connection either with the rectum or vagina.

But the rectum and vagina have to get through the floor of the pelvis and thus they do between the portions of the muscles which arise from the back of the pubes, here then is aperture in the floor of the pelvis.

But when we examine the rectum and how that passes through the floor of the pelvis we are struck with quite a different proposition with regard to its relations to the levator ani.

From the name of the muscle one infers that it has something to do with raising the anus, but its main action, I believe, is to straighten and open up the anal canal during defecation, and it does this by virtue of the fact that when it encircles the rectum it is continued down into its walls between the internal and external sphincters.

And it can only perform this action of straightening the anal canal by the rectum being kept fixed in such a way that it is not moved as a whole from its position—this fixation is brought about by the anterior fibres being inserted into the central point of the perineum and the posterior fibres into the coccyx, these two points d'appui by which the rectum is fixed antero-posteriorly, thus allowing the central part of the muscle to do its work—we see then why the muscle should have such a wide origin and why every part should be brought into play during defecation.

We can also understand how it is that the rectum can hardly be said to pass through the "pelvic aperture," for the levator ani is inserted into and becomes continuous with the rectum. This rectal opening is separated from the real pelvic aperture by the junction of the anterior fibres of the two levator ani muscles at what is one of the most important parts of the muscular floor e.g., the central point of the perineum. Now the space between the origins of the anterior portions of the levator ani which alone should be called the pelvic aperture is not very wide—it is wider in the female than in the male, but even so when one passes one's finger into this space in the dead subject it strikes one that the space is hardly as large as the diagrams in books give one to imagine, and that it is filled up by the pubo-prostatic ligaments or pubo-vesical ligaments in the female does not affect its actual width.

In the male through this aperture only the rectum passes, but in the female in addition we have the vagina.

No fibres of the levator ani are inserted into the vagina, but it simply encircles this channel.

Now during parturition the head of the child must pass through this aperture and to do so it is obvious that the anterior portions of the levator ani must be separated far enough apart to allow the head to pass. The levator ani muscle is said to act as a propulsive agent during parturition, but this of course it cannot be until the anterior bundles of each levator ani have been separated widely enough to grasp the head of the child.

It can easily be understood how the tension on these anterior bundles of the levator ani may become so great that some part may rupture or give way during child birth. And when we examine more closely what part of these

anterior fibres will give way—it is obvious that where the origins of this part of the muscle are stretched only in one direction, yet the insertions being practically into one another at the central point of the perineum have double the strain put upon them and the force acting tends to separate the bundles from each other at this point. At this point therefore the muscle will give way if so be the head of the child is too large or the extensibility of the muscle is not sufficient to allow it to pass.

Having ruptured, this important point will join up by means of fibrous tissue only, and as such will be a weak point in the floor of the pelvis. Any strain thrown on this weak point such as a woman getting up too soon after child birth, e.g., before the repair is completed, will cause stretching of this fibrous tissue, with the result that the anterior bundles of the levator ani which form the anterior part of the floor of the pelvis will become lengthened and cause this part of the floor to sag downwards. At the same time the space between these anterior fibres of the levator ani is widened and the support to the vagina is taken away. It follows therefore that the organs situated over the anterior part of the floor of the pelvis, e.g., the bladder and uterus will also sag downwards and in doing so will pull upon and stretch any ligaments which may have helped to keep them in position. And the support to the vagina being taken away, this organ by its own weight will tend to aggravate the downward tendency of the uterus.

If so be that from any cause the insertions of anterior fibres into the central point of the perineum do not join up at all—or if having joined up are stretched so much that the fibres can't be said to be inserted into anything then all the abovementioned results will be exaggerated. For the anterior part of the floor of the pelvis will be useless as a supporting agent.

It follows then that the most important part of the pelvic floor from a gynaecological point of view is this central point of the perineum and that injury to this part is most probably the cause of many cases of prolapse that occur.

This central point of the perineum should not be confounded with the penile body which lies entirely below the floor of the pelvis and which may be, and often is, ruptured without causing any displacement of the generative organs.

It appears to me that this injury to the central point of the perineum is analogous to the injury of the penile body when the head of the child is passing through the vaginal outlet, for the rupture does not occur at the sides of the vulva where the force is in only one direction but in the middle line where the stretching of both sides tends to act on the same spot.

Schatz described the injury to the levator ani as a submucous laceration of the muscle by which gaps were left between the muscular bundles—but he never verified his theory.

Others have described submucous lacerations, fatty degeneration, atrophy and pulysis of the torn muscular fibres, but, I believe, have not limited such conditions to the anterior bundles of the levator ani.

Kelly described how that the anal cleft in these cases of prolapse was no longer a sharp deep furrow, but was flat and shallow, and the anus was further back and more exposed.

This latter condition one can imagine would occur if the central point of the perineum lost its original position and support, as stated above, when the levator ani acts to straighten the anal canal—the canal must be fixed in front and behind so as to enable the muscle to perform this action and if the central point of perineum, the fixing point anteriorly, is injured, the whole canal will tend to pass back wards.

Providing therefore that the levator ani is intact such conditions as the integrity of the connective tissue or ligaments around the uterus—increased abdominal pressure or size and weight of the uterus, etc., should not cause any great degree of prolapse.

L COOK, M.B., F.R.C.S.,
Captain, I.M.S.,
Civil Surgeon, Puri

DELAYED CHLOROFORM POISONING

To the Editor of "THE INDIAN MEDICAL GAZETTE"

DEAR SIR.—I should like to add a word supplementing the letter of Captain Coullie in the March Gazette on the subject of "Delayed Chloroform Poisoning."

Fifteen years ago I became personally impressed with the dangers of chloroform as compared with ether as an anaesthetic. Chloroform has usually been regarded as a safe anaesthetic in India, where, on account of climate conditions and the more open operating theatres, there is less concentration of the drug than in cold climates. For the ordinary run of operations of short or moderate duration chloroform in India, if a reliable brand such as Duncan's, Burroughs and

Wellcome's or Merck's is used and given by an experienced anæsthetist, leaves little to be desired. For long operations and especially for abdominal operations ether should be given the preference.

In a discussion following a paper on gastric surgery read by me at the Bombay Medical Congress in 1908 I called attention to the desirability of substituting ether for chloroform in abdominal surgery.

In the Mission Hospital at Muz during the past fifteen years we have been using ether in preference to chloroform in this class of cases. When for some special reason chloroform has been given in preference to ether, or when ether has been badly borne and chloroform had to be substituted, and especially if the operation is a protracted one, we have come to be more apprehensive of late poisoning from this anæsthetic. Protracted vomiting after chloroform is, I believe, evidence of its closer combination with blood and hence of its greater poisonous effects. In our experience protracted vomiting after ether is much less common and acetoneuria as well. An illustration of the difference between the after effects of the two anæsthetics was found in the operation omentopexy for encephalitis of the liver. Here we found even in this brief operation of ten or fifteen minutes ether was less frequently followed by depression and signs of toxæmia than chloroform. Even ether is not entirely safe in such cases and we have improved the immediate after effects in this palliative operation by substituting local anaesthesia (Novocain). Acute intestinal obstruction, especially if high up in the bowel as indicated by the symptoms, is another condition in which a general anæsthetic should be avoided, especially chloroform.

Ether by the drop method, preceded by morphia and atropin with or without hyoscine hydrobromate half an hour before the anæsthetic with a few drops of chloroform at intervals if needed to secure relaxation, is quite as satisfactory from the surgeon's position as chloroform, and I am fully convinced is much the safer anæsthetic in abdominal surgery. At least this is our experience in the Muz Hospital with between 200 and 300 abdominal operations annually.

In conclusion, I should like to suggest not only the larger use of ether in our Indian hospitals, but a more extensive training of Indian assistants in the administration of various anæsthetics and of ether in particular. Ethyl chlorides and nitrous oxide gas are still too expensive for common use in India and the next best should be resorted to, viz., a larger employment of ether and a wider use of local anæsthetics. I might add that we have substituted the ordinary saline enema after operations by the use of tap water containing an ounce or two sugar to 30 or 40 ounces of water in cases in which we have any reason to suspect the possible development of acetoneuria. That the disturbance of metabolism by change of diet prior to operations is of less importance among vegetarians as suggested by Captain Coulie, I believe to be true. I believe also that the over zealous of purgatives prior to operations does more harm than good in upsetting metabolic equilibrium to which a general anæsthetic may add insult to injury.

Yours truly,
W J WANLESS, M.D.

KRAIT IDENTIFICATION

To the Editor of "THE INDIAN MEDICAL GAZETTE"

SIR.—In reply to Capt A J Bett's enquiry as to how I identified the Krait, I would draw his attention to the excellent way the identification of the Krait is expounded in Major Wall's book on the poisonous snakes of India.

However, I believe that it is possible that a poisonous snake can bite without injecting poison, owing to its poison glands being empty at the time, as I don't doubt for a moment the toxicity of the Krait's poison.

Yours, etc.,
J CAMPBELL BOYD

IODINE IN THE TREATMENT OF PLAGUE

To the Editor of "THE INDIAN MEDICAL GAZETTE"

SIR.—There has been some correspondence lately in the lay press concerning the treatment of Bubonic Plague by Tinct Iodi and this has been described as a new treatment.

I would like to mention that I employed this drug as far back as February or March 1912, while at Gaya, and obtained some extraordinary results in a few cases. I subsequently published a note on the subject in the Journal of the London School of Tropical Medicine in February 1913. The cases were too few in number to enable me to be sure of the invariable efficacy of the drug. The first case treated, however, was a desperately bad one and the rapid cure which

followed struck me very much. Colonel Harris, who was then the Inspector General of Civil Hospitals of Bengal and Bihar, saw the case a few days after in the Police Hospital at Gaya and expressed himself as very much struck by the results of the treatment and made a note to that effect in the inspection book of that hospital. This case came into the hospital comatose, temperature 105° and with a right inguinal bubo. Plague bacilli were found by Dr Robertson and by me in the enculturing blood and in the juice of the glands. My experience of hundreds of cases of plague led me to think that no known remedy could save a man who had reached this condition and it was only as a last resource that I tried an intravenous injection of Tinct Iodi in 1/16 ad 1/1, and repeated this at intervals, with the result already stated. Two other cases, young boys, were treated similarly, but with smaller doses and both recovered. Shortly after this I went on 18 months' leave.

Since my return to India I have tried the remedy in a small series of cases, but have not as yet got sufficiently reliable figures to definitely decide as to the exact value of the drug. Some cases recover completely from the febrile stage and die of heart failure, from attempts at getting up, foolish feeding, etc. In plague, during convalescence, the toxic effects of the injection leave the patient's heart in an extremely weak condition (very much as in diphtheria) and premature exertion very frequently leads to a fatal issue among ignorant folk. I am gradually collecting the results of this treatment and will soon be able, I hope, to come to some definite conclusion as to the real value of iodine in the treatment of plague.

All the earlier cases treated by me were injected intravenously with a hypodermic needle—direct injection without any skin incision, etc. The drug is also now being tried hypodermically and by the mouth. Except for hospital cases, which are few and far between, the last method is the only one which can be readily employed.

My chief reason for writing this letter is to point out that the treatment advocated in the press by Commissioner Booth Tucker is by no means a new one—at least as far as I am concerned. I was very glad to see that he pleaded for a more extensive use of the drug, as I have good reason to think that it may be of great value, but as a medical man I cannot go further without collecting more cases.

I have been very much struck with the complete absence of any untoward symptoms in injecting dilute solutions of iodine intravenously and one cannot but feel that perhaps other diseases may prove amenable to the treatment. There is no reason why it should not be tried with advantage in ordinary septicemic cases, due to a variety of organisms and even in chronic affections, such as kala azar, where the organism is an extremely delicate one. I am trying the drug in such a case at present. Syphilis, which is so amenable to iodides, may also be more rapidly cured by pure iodine injections. But these are mere speculations.

The only literature I have been able to collect on the subject—and this was by the kindness of Sir Lauder Brunton, I.R.S.,—are the experiments of Davaine, Krajewsky, and Boehm and Berg. Davaine found that when iodine was added to septicemic blood, it destroyed its infective quality in the proportion of 1, 10,000 and somewhat similar results were obtained by Krajewsky with the blood of anthrax cases. Boehm and Berg found that large doses of iodine injected directly into the blood produced œdema of the lungs and haemorrhagic exudation into the pleura and congestion of the kidneys.

So far as I can find, the intravenous injection of iodine has never been used before for antiseptic purposes previous to my experiments. I would like to suggest that some experiments on animals might be carried out on these lines at the Research Laboratory at Kasauli.

CHAPRA, SARAN, }
20th March, 1914 }
Yours, etc.,
F POWELL CONNOR, F.R.C.S.
(Eng.), D.T.M. & H (Eng.), &c.,
CAPTAIN, I.M.S.

THERAPEUTIC NOTICES.

THE IMPERIAL TRANS ANTARCTIC EXPEDITION

SIR ERNEST SHACKLETON'S OPINION OF BOVIL

PRESIDING at the annual general meeting of the Bovil Company, held in London, 10th February, 1914, Lord Euston told the shareholders that Sir Ernest Shackleton had selected Bovil as the only concentrated beef food to be taken by him on the forthcoming Imperial Trans Antarctic Expedition, and that, in writing to his agent on the subject, Sir Ernest had said "I consider the question of concentrated beef supply is most important."

IT MUST BE BOVRIL"

In view of the unmatched experience of Sir Ernest Shackleton, who has been with, or associated in the equipment of, no fewer than five important Polar Expeditions, this was, he thought, a very high tribute indeed.

Dr R T LIPPIK, Helminthologist of the London School of Tropical Medicine, and Wandsworth Scholar, has just left London with Surgeon E L Atkinson, R.A. (who has been seconded by the Admiralty), and Mr Cherie Gairard, both of whom accompanied the Antarctic Expedition.

The object of this expedition to the East is to ascertain the mode of spread of trachoma diseases of man, especially Bilharziasis. Investigations will also be made into Ankylostomiasis which has wrought such havoc among the coolies on the tea and rubber estates.

The expedition has been subsidised by a grant from the Colonial Office and the United States Rubber Co have offered facilities for the study of medical problems on their estates in Sumatra.

MESSRS WHIFFEN & SONS, LTD., Battersea, London, have paid special attention to the preparation of Emetine and now supply it, either in Hydrochloride or Hydrobromide form in one gramme tubes or for hypodermic use in boxes of one dozen Ampoules. They also publish many reports on the use of this drug, but our readers are well acquainted with its value. Messrs Whiffen's preparations of this drug will be found reliable and satisfactory.

THAT enterprising firm Messrs Butterworth & Co (India), Ltd., announce the publication of a revised 2nd edition of Balenger's well known book—Genito Urinary Diseases. Special attention is given to the "healing in" abortive treatment of acute gonorrhœa.

WE have received a reprint of an article by Dr E Meyer, (*Dent Med., Woch.*, 38, 1912) on the use of Dicurit in the treatment of Bronchial Asthma. Dr Cahn gave it in large doses, 15 grains two or three times during the evening. In bronchitis forms of asthma Dicurit is highly regarded on

DUFF House, the former home of the Duke of York and H R H the Princess Royal, has now been converted into a home for the treatment of disorders of metabolism. The house has been specially fitted up and the baths are of the latest pattern. The cases suited for Duff House are dyspepsia, chronic colitis, diabetes, gout, obesity, etc. The park is of 165 acres with 2 golf courses, tennis courts, etc. The railway station is Banff Bridge on Great North of Scotland Railway.

THE attention of officers in charge of laboratories is directed to the new list published by C Pearson & Co, Ltd (235, Regent Street, London, W). It is a very complete list of all sorts, biological incubators, autoclaves, digesters, thermometers and all kind of apparatus and materials for laboratories, large and small.

ONE of the most brilliant of recent successes in Tropical Medicine has been the introduction and use of Emetine for the treatment of amoebic dysentery. As a natural consequence, close attention is being devoted by clinicians to methods of administering the drug and to the discovery of the ideal dose. Interest will be aroused, therefore, in the new strength issued by Burroughs Wellcome & Co, as 'Tabloid' Hypodermic Emetine Hydrochloride, gr 1, which presents the drug in accurate doses ready for solution and 'Vaporole' Emetine Hydrochloride, gr 1, which is issued as a sterile solution in hermetically sealed containers available for immediate hypodermic injection.

Service Notes.

WITH the approval of the Most Hon'ble the Secretary of State for India, the Government of India are pleased to confer a Good Service Pension of £100 per annum on the undermentioned officer—

From the 22nd September 1913, in the room of Lieutenant General B H Pottinger, Royal (late Bombay) Artillery, deceased.

Colonel R N Campbell, C.B., C.I.E., M.B., I.M.S.

Commissions

Surgeon (ranking with Lieutenant), 1st October 1877
Lieutenant-Colonel, 1st October 1897
Colonel, 2nd April 1909,

Appointments.

Arrived in India, 27th April 1878
Attached 38th Native Infantry, 28th April 1878 to 22nd August 1888
Officiating Medical charge, 45th Native Infantry, 23rd August 1878 to 14th October 1878
Officiating Medical charge, 33rd Native Infantry, 15th October 1878 to 27th May 1879
Attached, Naga Hill Field Force, 28th May 1879 to 26th May 1880
Medical charge, Base Hospital and Medical Depot, Naga Hill Field Force, 27th May 1880 to 21st December 1880
Officiating Medical charge, 34th Native Infantry, 25th December 1880 to 21st January 1882
Officiating Deputy Sanitary Commissioner, 2nd Circle, North West Province, 22nd January 1882 to 29th August 1883
Officiating Civil Surgeon, Tezpur, 30th August 1883 to 14th February 1889
Civil Surgeon, Shillong, 15th February 1889 to 22nd December 1890
Civil Surgeon, Gauhati, 23rd December 1890 to 16th July 1891
Civil Surgeon, Shillong, 17th July 1891 to 21st October 1891
Civil Surgeon, Gauhati, 22nd October 1891 to 18th March 1892
Senior Medical Officer, Port Blair, 19th March 1892 to 24th April 1897
Civil Surgeon, Shillong, 25th April 1897 to 21st September 1900
Civil Surgeon, Purnea, 22nd September 1900 to 29th April 1901
Officiating Civil Surgeon, Dacca, 30th April 1901 to 10th November 1907
Attached to office of Principal Medical Officer, Presidency and Assam Brigades, 11th November 1907 to 31st December 1907
Civil Surgeon, Dacca, 1st January 1908 to 1st October 1908
Officiating Inspector General, Civil Hospitals, Eastern Bengal and Assam, 2nd October 1908 to 1st April 1909
Inspector General, Civil Hospitals, Eastern Bengal and Assam, 2nd April 1909 to 31st March 1912
Inspector General, Civil Hospitals and Prisons, and Sanitary Commissioner, Assam, 1st April 1912

War services and rewards

Naga Hills Expedition 1879-80—Despatches London Gazette, 27th April 1880—Medal with clasp
Alha Expedition, 1883-84—Mentioned in Despatches,
C.I.L.—25th June 1909
C.B.—14th June 1912

THE undermentioned officers of the Indian Medical Service having completed their courses at the Royal Army Medical College and at Aldershot, have been finally admitted to the service. Their commissions will bear date the 26th July 1913—

Sahib Singh Sokhey, M.B.
Atul Krishna Sinha, M.B.
Subramanya Doraisamy
Allan Seddon, M.B.
James Findlay, M.B.
William Collis Spackman, M.B.
Jyotish Chandra De, M.B.
Nan Lal Magan Lal Mehta
Robert Morrison Easton, M.B.
Charles Henry Powell Allen
Peregrine Stephen Brackenbury Langton
Reginald Victor Martin

LIEUTENANT COLONEL W R EDWARDS, C.M.G., Indian Medical Service (Bengal), resumed charge of his appointment as an Agency Surgeon of the 1st class and Chief Medical Officer in the North West Frontier Province, with effect from the 5th February 1914

LIEUTENANT COLONEL T W IRVINE, I.M.S. (Bombay), on being relieved of his duties as an officiating Agency Surgeon of the 1st class and Chief Medical Officer in the North-West Frontier Province, is posted as Civil Surgeon, Peshawar, with effect from the 5th February 1914

CAPTAIN C I BRIERLEY, I.M.S., an officiating Agency Surgeon of the 2nd class, is placed on general duty in the Peshawar District, with effect from the 5th February 1914

THE services of Major J M Woolley, I.M.S., are placed temporarily at the disposal of the Government of Bengal with effect from the afternoon of the 26th November 1913.

IN continuation of the Home Department Notification No 53, dated the 9th April 1913, Captain J H Murray, I M S, is confirmed in the appointment of Senior Medical Officer, Port Blair, with effect from the afternoon of the 6th November 1913.

THE services of Captain E B Munro, M D, I M S, are placed temporarily at the disposal of the Government of Bengal for civil employment.

THE services of Captain A F Babouru I M S, are placed at the disposal of the Government of India, Department of Education, for employment in Assam. He relinquished charge of his duties as Plague Medical Officer, Ambala, on the afternoon of the 4th February 1914.

CAPTAIN L H KHAN, I M S, military medical officer, Fatehgarh, is directed to hold civil medical charge of the Fatehgarh district in addition to his other duties, vice Captain G A Jolly, I M S, granted leave.

DR A L HOOPS, of the Straits medical service, has gone on leave on recovery from an attack of cholera. The following notice is extracted from *The Straits Echo* of 20th March —

The Arnott Memorial Gold Medal for 1913-1914 has been awarded by the Irish Medical Schools and Graduates' Association to Dr A L Hoops, State Surgeon and Superintendent of Prisons, Kedah.

This medal is awarded once a year for —

(a) an act of heroism, or distinguished service, or act performed in the discharge of medical duties, either in civil life or in the Navy or Military services, at home, on the high seas or abroad

(b) any achievement in medicine, surgery, or in medical research.

The act of gallantry for which the medal has been awarded to Dr Hoops was performed in January, 1912 when he was at home in Dublin on leave. Dr Hoops dived into the River Liffey, recovered the body of a boy of about ten years of age and endeavoured to restore life by artificial respiration. The attempt was not successful, but at the subsequent inquest the coroner stated that he would bring the conduct of Dr Hoops, who was in the icy water in heavy top boots and riding kit for more than an hour, to the notice of the authorities. The award of the Arnott Memorial medal is the result.

LIEUTENANT COLONEL J MORWOOD, I M S, civil surgeon, Shahjahanpur, privilege leave, combined with special leave on urgent private affairs, for a total period of six months, from the 17th April 1914.

LIEUTENANT-COLONEL W YOUNG, I M S, civil surgeon, Cawnpore, privilege leave, combined with furlough, for a total period of eight months, from the 30th March 1914.

LIEUTENANT COLONEL C MILNE, I M S, civil surgeon, has been transferred from Basti to Cawnpore.

MAJOR W S WILLMORE, I M S, civil surgeon, on return from leave is posted to Sitapur.

LIEUTENANT COLONEL W D SUTHERLAND, M D, I M S, is appointed Imperial Seiologist for two years from 1st March 1914. It is well known that Lieutenant Colonel Sutherland has demonstrated conclusively the great value of the biological blood tests and his appointment to this office in which he is admittedly the leading expert has been long expected. His laboratory is in the Medical College, Calcutta.

CAPTAIN H A H ROBSON, I M S, has taken over charge of the Central Asylum, Berhampur, Bengal, vice Captain A M Peebles, granted furlough.

MAJOR H B STEEN, I M S, on return from furlough, was posted as civil surgeon to Berhampore, Bengal.

WE are glad to know that Mrs Bird has recovered from a severe attack of cholera, as a consequence Lieutenant-Colonel R Bird, C I E, M V O, F R C S, has gone on leave on urgent private affairs and Major E Owen Thunstan, F R C S, I M S, again acts as professor of surgery, Calcutta.

HIS Excellency the Governor of Bombay in Council is pleased to make the following appointments, vice Lieutenant-Colonel P P Kilkelly, M B, B Ch (Dub), I M S, retired —

MAJOR G MCPHERSON, M B, C M (Glou), I M S, to be Professor of Ophthalmic Medicine and Surgery, Giant Medical College, Bombay, and Ophthalmic Surgeon, Cowasji Jehangir Hospital.

MAJOR T S NOVIS, F R C S, I M S, to act as Professor of Ophthalmic Medicine and Surgery, Giant Medical College, Bombay, and Ophthalmic Surgeon, Cowasji Jehangir Hospital, in addition to his own duties from the date of departure of Lieutenant Colonel Kilkelly, I M S, until the arrival from leave of Major McPherson, I M S, or pending further orders.

MAJOR A W TUCK, F R C S (I), D P H, I M S, to be Presidency Surgeon, Second District, with attached duties, vice Major McPherson, I M S.

HIS Excellency the Governor of Bombay in Council is pleased to appoint, with effect from the 15th March 1914, Major R M Carter, F R C S, D T M (Liverpool), I M S, to be full time Professor of Pathology and Morbid Anatomy and Curator of Pathological Museum, Giant Medical College, and to continue to act as Second Physician and Registrar, J J Hospital, in addition to his own duties, until date of relief.

HIS Excellency the Governor of Bombay in Council is pleased to make the following appointments —

Captain I D Jones, M D (Lond), I M S, to act as Second Physician and Registrar, J J Hospital, and Professor of Materia Medica, Giant Medical College, Bombay, vice Major R M Carter, F R C S, D T M (Liverpool), I M S.

CAPTAIN F B SHPTTLE, I M S, is appointed to act as Civil Surgeon, Sholapur.

MAJOR J G P MURRAY, I M S, Officiating Civil Surgeon of Cuttack, is allowed leave for three months under Article 260 of the Civil Service Regulations, with effect from the 1st April 1914, or any subsequent date on which he may be relieved.

MAJOR J W D MEGAW, I M S, Civil Surgeon of Monghyr, is appointed to act as Civil Surgeon of Cuttack, during the absence on leave of Major J G P Murray, I M S, or until further orders.

SENIOR ASSISTANT SURGEON BINOD BINARI GHOSHAI of the Monghyr Sidi Dispensary is appointed temporarily to act, in addition to his own duties, as Civil Surgeon of that district, during the absence on deputation of Major J W D Megaw, or until further orders.

LIEUTENANT COLONEL F P MACKARD, I M S, F R C S, Professor of Ophthalmology, having been granted furlough on medical certificate, Major W V Coppinge, F R C S, I M S, has come from Dibrugarh to act for him.

MAJORS H L FR ABROTT, I M S, Civil Surgeon, Ferozepore, has been granted 2½ years' combined leave from 19th April 1914.

On return from leave Capt P S Mills, I M S, was posted to Ambala as Plague Medical Officer.

CAPTAIN W P G WILLIAMS, I M S, on completion of his special plague duty, to officiate as Superintendent, Central Prison, Faizabad, vice Major J E Clements, I M S, transferred.

MILITARY ASSISTANT SURGEON H B ROSAIR, I S M D, whose services have been placed at the disposal of this Government, to be Assistant to the Civil Surgeon, Lucknow, with effect from the 1st March 1914, and Lecturer on Forensic Medicine, King George's Medical College, Lucknow, in addition to his other duties.

CIVIL ASSISTANT SURGEON BIPIN BINARI BANARI, attached to the King Edward VII Hospital, Benares, to officiate as Civil Surgeon, Bira Banki.

MAJOR W D HAYWARD, M B, I M S, Medical Store keeper to Government and Officiating Medical Store keeper to Government, Madras, is granted 3 months' privilege leave and in continuation thereof 1 year and 5 months' furlough under Article 233 (1) of the Civil Service Regulations with effect from the 25th March 1914 or subsequent date of availing himself of it.

MAJOR C F MARR, M B, I M S, Medical Store keeper, sub *pro tem* and Officiating Medical Store keeper to Government, Lahore Cantonment, is transferred to Madras to officiate as Medical Store keeper there, vice Major W D Hayward, M B, I M S, granted leave, with effect from 25th March 1914, or until further orders.

ASSISTANT SURGEON W. J. MASTERSON, I.M.D., is appointed to hold charge of the Medical Store Depot, Lahore Cantonment, in addition to his own duties with effect from the date he relieves Major Mati, I.M.S., and until the return from leave of Major A. A. Gibbs, I.M.S.

MILITARY ASSISTANT SURGEON C. MULLEN, I.M.D., Civil Surgeon, Lushai Hills, is granted combined leave for one year, viz., privilege leave for three months and furlough for the remaining period, under Articles 233 and 606 (note 2) of the Civil Service Regulations, with effect from the 10th April 1914, or any subsequent date on which he may avail himself of it.

MILITARY ASSISTANT SURGEON H. C. H. MCKENZIE, I.M.D., Travelling Inspector of Emigrants, Dhurri, is appointed to officiate as Civil Surgeon, Lushai Hills.

MILITARY ASSISTANT SURGEON K. W. BRINKWORTH, I.M.D., in medical charge of the Mokokchung subdivision in the Naga Hills, is appointed to act as Travelling Inspector of Emigrants, Dhurri.

LIEUTENANT COLONEL E. A. R. NEWMAN, I.M.S., has been granted leave for 6 months, on medical certificate.

LIEUTENANT COLONEL S. H. HENDERSON, I.M.S., Superintendent, Central Prison, Agra, to officiate as Inspector General of Prisons United Provinces, *viz.* the Honble Lieutenant Colonel G. MacTaggart, C.I., I.M.S.

CAPTAIN A. S. M. PITKILL, I.M.S., Superintendent, Central Lunatic Asylum, Berhampore, is allowed privilege leave, combined with study leave and furlough for fifteen months, *viz.*, privilege leave for three months under Article 260 of the Civil Service Regulations, study leave for nine months under rules 2 and 6 of the study leave rules and furlough for the remaining period under Article 308 (b) of the Civil Service Regulations, with effect from the date on which he may be relieved of his duties.

PRIVILEGE leave for three months, under Article 260 of the Civil Service Regulations, is granted to Captain W. TUR, M.B., F.R.C.S., I.M.S., Civil Surgeon, Nimir, with effect from the 4th April 1914, or subsequent date on which he may avail himself of it.

THIRD grade Civil Assistant Surgeon W. Venkata Ramamurthy, I.M.S., in charge of the Branch Dispensary, Berhampur, is appointed to officiate as Civil Surgeon, Nimir, during the absence of Captain W. Tur, M.B., F.R.C.S., I.M.S., on leave, or until further orders.

THE following promotion is made, subject to His Majesty's approval

To be Colonel

LIEUTENANT COLONEL THOMAS EDWARD DIXON, M.B., *viz.* Colonel R. W. S. Lyons, Indian Medical Service (Bombay), promoted, with effect from the 10th January 1914.

WITH reference to the Notifications quoted in the margin, Army Department Notification No. 282, dated the 7th April 1911, and Army Department Notification No. 822, dated the 29th September 1911, July 1912 — James Jackson Robb, M.B., Shaik Abdui Ruzzak

LIEUTENANT COLONEL W. H. OGILVE, M.B., I.M.S., Health Officer and Civil Surgeon of the Notified Area, Delhi, is granted three months' privilege leave under Article 260 of the Civil Service Regulations, combined with three months' furlough on private affairs under the Leave Rules of the Indian Army with effect from the 1st May 1913.

THE Department of Education Notification No. 1283, Sanitary, dated the 7th August 1913, is hereby cancelled.

UNDER section 37 of the Code of Criminal Procedure, 1893, the Governor of Bombay in Council is pleased to empower Major G. E. Stewart, I.M.S., Superintendent of Mahableshwar and Magistrate of the First Class in the district of Satara, to try in a summary way all the offences mentioned or referred to in section 260 of the same Code.

THE services of Captain H. H. King, M.B., I.M.S., are placed temporarily at the disposal of the Director General, Indian Medical Service, with effect from the 7th March 1914.

THE services of Captain A. F. Bahadur, M.B., I.M.S., are placed temporarily at the disposal of the Chief Commissioner of Assam.

LIEUTENANT COLONEL P. CAPR WHITI, I.M.S. (Madras), an Agency Surgeon of the 2nd class, is posted as Residency Surgeon and *officer* Assistant to the Resident in Deputi, with effect from the 20th February 1914.

MAJOR F. S. B. WILLIAMS, I.M.S., an Agency Surgeon of the 2nd class, is posted as Residency Surgeon, Gwalior, with effect from the 5th March 1914.

MAJOR L. B. G. TUCKEY, M.B., I.C.S. (London), I.M.S., is granted privilege leave of absence for three months with effect from the date of relief.

HIS Excellency the Governor of Bombay in Council is pleased to appoint Lieutenant Colonel H. Bennett, M.B., C.M., *viz.* (Edin.), I.R.C.S. (L.) I.M.S. to act as Deputy Sanitary Commissioner, Gauhati Registration District, in addition to his own duties, during the absence on deputation of Dr Jamshed D. Munshi or pending further orders.

MAJOR W. D. RITCHIE, I.M.S., Civil Surgeon, Goalpara, is appointed to officiate as Civil Surgeon 1st class, with effect from the 15th February 1914, *viz.* Major H. Innes, I.M.S., on leave.

MAJOR H. A. J. GIDNEY, I.M.S., Civil Surgeon, Naga Hills, is transferred to Syhet as Civil Surgeon of that district.

ON being relieved by Major H. A. J. Gidney, I.M.S., Captain L. B. Scott, I.M.S., Civil Surgeon, Syhet is transferred to the Khuri and Jaintia Hills as Civil Surgeon of that district.

DR SHIV NARAYAN TIWARI, M.R.C.S. (England), I.R.C.P. (London), D.T.M. & H. (Cambridge), and D.P.H. (Bristol), is appointed on probation for one year as a Deputy Sanitary Commissioner of Bihar and Orissa, with effect from the 2nd March 1914, and posted to the charge of the Oursi Circle.

MAJOR W. H. KENRICK, I.R.C.P., M.R.C.S., D.T.M., I.M.S., on deputation on Military Survey duty, Central Provinces, is appointed to be Civil Surgeon of Pithunruhi, in addition to his own duties, during the summer season of 1914.

HIS Excellency the Governor of Bombay in Council is pleased to appoint Major A. W. Tuke, I.R.C.S. (I) D.P.H., I.M.S., to act as First Physician, J.J. Hospital and Professor of Medicine and Clinical Medicine and Therapeutics, Grant Medical College in addition to his own duties, during the absence on leave of Major E. F. G. Tucker, M.B., B.S. (London), I.M.S., or pending further orders.

MAJOR R. W. ANTHONY, M.B., C.M. (Edin.), I.R.C.S. (E.), I.M.S., is granted, from the 30th March 1914 such privilege leave of absence as may be due to him on that date in combination with furlough on medical certificate for such period as may bring the combined period of absence up to eight months.

LIEUTENANT COLONEL S. H. BURNETT, M.B., C.M. (Abdn.), I.M.S., is appointed to do duty as Presidency Surgeon, First District Physician on the Staff of St. George's Hospital, Marine Surgeon and in Medical charge of the Elphinstone College, in addition to his present duties.

HIS Excellency the Governor of Bombay in Council is pleased to make the following appointments — Major A. F. W. King, F.R.C.S. (E.), I.M.S., to act as Civil Surgeon, Kuachi, *viz.* Major R. W. Anthony, M.B., C.M., (Edin.), F.R.C.S. (E.), I.M.S., granted leave, pending further orders.

PRIVILEGE leave for two months and twenty one days, under Article 260 of the Civil Service Regulations, is granted to Captain H. Watts, M.B., B.S., M.R.C.S., I.R.C.P. I.M.S., Officiating Civil Surgeon, Betul, with effect from the 17th April 1914, or the subsequent date on which he may avail himself of it.

SECOND grade Civil Assistant Surgeon Sakharam Ganesh Paranjape, I.M.S. in charge of the Main Dispensary, Betul, is appointed to officiate as Civil Surgeon, Betul, during the absence on leave of Captain H. Watts, or until further orders.

CAPTAIN M F REANEY, M.B., D.P.H., M.R.C.S., L.R.C.P., I.M.S., Civil Surgeon, who was granted combined leave by Order No 1233, dated the 31st May 1913, has been granted, by His Majesty's Secretary of State for India, study leave from the 1st October to the 31st December 1913.

CAPTAIN H A H Robson, I.M.S., is appointed to act as Superintendent, Central Lunatic Asylum, Beliampore, during the absence, on leave, of Captain A S M Peebles, I.M.S., or until further orders.

MAJOR E E WATERS, I.M.S., Civil Surgeon, Howrah, is appointed to act as a Civil Surgeon of the first class with effect from the 15th December 1913, vice Lieutenant Colonel E A W Hall, I.M.S., or until further orders.

This cancels Notification No 309Medl, dated the 29th January 1914.

MAJOR O A LANE, I.M.S., Civil Surgeon Dweeling, is appointed to act as a Civil Surgeon of the first class, with effect from the 9th January 1914, vice Lieutenant Colonel A H Nott, I.M.S., or until further orders.

MR HENRY AUNG KHIN, M.B., Ch.B., is appointed temporary Assistant Port Health Officer, Rangoon, vice Mr A E Koi b, deceased.

ON return from privilege leave Honorary Captain T W Minty is appointed to be Civil Surgeon, Sandoway, in place of Maung Tha Noo, A.T.M., K.S.M., proceeding on leave.

CIVIL ASSISTANT SURGEON MAUNG SHWE GE, L.M. & S., who was appointed to officiate as Civil Surgeon, Pyapon, in this department Notification No 335 dated the 4th December 1913 will continue to officiate in that Civil Surgeoncy till further orders.

This department Notification No 47, dated the 28th February 1914, is hereby cancelled.

ON return from leave of Lieutenant Colonel W G Pidmore, I.M.S., Ophthalmic Surgeon, General Hospital, Rangoon, Major J Good, I.M.S., Officiating Ophthalmic Surgeon, General Hospital, Rangoon, is appointed to be Civil Surgeon, Myutungmya District, in place of Captain S T Crump, I.M.S., proceeding on leave.

MAJOR W H COX, D.S.O., I.M.S., has been granted by His Majesty's Secretary of State for India an extension of leave on medical certificate for six months.

THE following appointments and transfers are ordered in the Civil Medical Department, Burma —

Civil Assistant Surgeon R S Aiyer, L.R.C.P. & S (Edin), to officiate as Civil Surgeon, Yamethin, as a temporary measure, in place of Senior Military Assistant Surgeon and Honorary Lieutenant W St M Heffernan transferred.

On relief by Mr Aiyer, Senior Military Assistant Surgeon and Honorary Lieutenant W St M Heffernan, to be Civil Surgeon, Henzida, in place of Senior Military Assistant Surgeon and Honorary Lieutenant P McCarthy, proceeding on leave.

On relief by Mr H E Wells, M.B., C.M. (Edin), First Class Military Assistant Surgeon G W Vincent, officiating Civil Surgeon, Pegu, to officiate as Civil Surgeon, Yamethin, in place of Civil Assistant Surgeon R S Aiyer, L.R.C.P. & S. (Edin).

MAJOR R F BAIRD, I.M.S., civil surgeon, Gonda, privilege leave, combined with furlough for a total period of twelve months, with effect from the 1st April 1914.

MAJOR E J MORGAN, I.M.S., civil surgeon, has been granted by His Majesty's Secretary of State for India extension of leave on medical certificate for a period to be advised later.

THE civil assistant surgeon attached to the sadar dispensary at Gonda to hold civil medical charge of that district, in addition to his other duties, vice Major R F Baird, I.M.S., granted leave.

THE civil surgeon of Bahraich to hold visiting medical charge of Gonda, vice Major R F Baird, I.M.S., granted leave.

CAPTAIN HOWARD CROSSLEY, I.M.S., has passed, with honours, his D.P.H. examination of the Conjoint Board of England.

CAPTAIN R A NEEDHAM, M.B., I.M.S., was on deputation in the Office of the Director General, Indian Medical Service, from the 11th to the 28 February 1914, both days inclusive.

BREVET COLONEL B G SETON, V.H.S., I.M.S., Deputy Director General, Indian Medical Service, is granted combined leave with effect from the forenoon of the 1st March 1914, viz., privilege leave for three months, with study leave for two months and furlough for four months in continuation.

LIEUTENANT COLONEL J GOULD, M.B., I.M.S., Assistant Director General, Indian Medical Service (Stores) is appointed to officiate as Deputy Director General, Indian Medical Service, during the absence on leave of Brevet Colonel B G Seton, V.H.S., I.V.S., or until further orders.

CAPTAIN R A NEEDHAM, M.B., I.M.S., is appointed to officiate as Assistant Director General, Indian Medical Service (Stores), during the absence of Lieutenant Colonel J Gould, M.B., I.M.S., on other duty.

COLONEL C O MANIFOLD, Indian Medical Service, Inspector General of Civil Hospitals, United Provinces, is granted privilege leave for three months under Article 260 of the Civil Service Regulations, combined with special leave for three months and twenty days under paragraph 226 of the Army Regulations, India, Volume II, with effect from the 28th March 1914.

LIEUTENANT COLONEL C MACTAGGART C.I.E., I.M.S., is appointed to officiate as Inspector General of Civil Hospitals, United Provinces, during the absence on leave of Colonel C O Manifold, I.M.S., or until further orders.

THE King has been graciously pleased to confer the Decoration of the Royal Red Cross upon Miss Eleanor Sarah Kelly, Senior Lady Superintendent, Queen Alexandra's Military Nursing Service for India, in recognition of the special devotion and competency displayed by her in her nursing duties in Military Hospitals in India.

Notice.

SCIENTIFIC Articles and Notes of interest to the Profession in India are solicited. Contributors of Original Articles will receive 25 Reprints gratis, if requested.

Communications on Editorial Matters, Articles, Letters and Books for Review should be addressed to THE EDITOR, *The Indian Medical Gazette*, c/o Messis Thacker, Spink & Co., Calcutta.

Communications for the Publishers relating to Subscriptions, Advertisements and Reprints should be addressed to THE PUBLISHERS, Messis Thacker, Spink & Co., Calcutta.

Annual Subscriptions to "The Indian Medical Gazette," Rs 12, including postage, in India Rs 14, including postage, abroad.

BOOKS, REPORTS, &c., RECEIVED —

Sanitary Commissioner, India, Report of Madras Hospitals Report

Rangoon Surgery at Civil Hospital

Dr Elizabeth Belby's Medical Hints for Indian Ladies

Barcroft's Respiratory Function of the Blood 18s Cambr Univ Press

Cornet's Acute General Biliary Tuberculosis Butterworth & Co (India), Ld

W T Fernie's Herbal Simples (3rd Ed.) J Wright & Sons, Ld

Frons Formulaire de Therapeutique Clinique (12th Ed.) Littraire Maloine, Paris

Daniel and Alcock's Tropical Medicine, Part 2 (2nd Ed.) Butterworth & Co (India), Ld

Edwards' Herbs Chemistry of the Garden J Murray

Sim Wallace's Dental Diseases and Public Health The Dental Record

Hudson's Aids to Medicine (2nd Ed.) Baillière, Tindall & Cox

Bellenger's Genito Urinary Diseases (2nd Ed.) Butterworth & Co, Ld, Calcutta

LETTERS, COMMUNICATIONS, &c., RECEIVED FROM —

Lt Col D G Crawford London Col B Seton, I.M.S., Simla, Lt Col Jennings, I.M.S., Bombay, Maj Glen Liston, C.I.E., Bombay, Maj. Maddocks, I.M.S., Ahmednagar Capt Fraser, I.V.S., Madras, Maj. Hingston, I.M.S., Madras, Capt J Oxley, I.M.S., Amritsar, Capt Fleming Barnardo, I.M.S., Comilla, Lt Col D A R Newman, I.M.S., Calcutta, Capt Reinhold, I.M.S., Bijnor, Maj Cornwall, I.M.S., Coonoor, Lt Col E A R Newman, I.M.S., Lt Col J Gould, I.M.S., Simla, Dr Gleeson, Dhanjapore

Original Articles.

FATAL CASE OF OPHITOXÆMIA.

Bite from the common Indian Krait (*Bungarus caeruleus*) *Toratmia*

DEATH IN 10 HOURS

By F. WALL,

MAJOR, I.M.S.,

Fellow, Linnean Society

BEFORE proceeding to the history of this case I must mention that several versions of this casualty have appeared in various papers. These versions are inaccurate in many details one even reporting the snake as a cobra, and various theories have appeared to account for the death.

The details set forth here are the result of an interview I had with the deceased's friend, Mr Chambers, who was with Mr Fox when he was bitten, and subsequently the entire day until 7 P.M. when his condition was so serious that he was admitted to hospital. On the 26th February, 1914, Mr Fox, a young, middle-aged European in robust health, was bitten by a krait (*B. caeruleus*)* on the left wrist at about 10 A.M. in the Zoological Gardens, Calcutta. The snake was a half grown one measuring 2 feet 3 inches, and the wounds inflicted consisted of 5 punctures. Mr Fox was experimenting with a view to demonstrating the efficacy of a secret remedy in which he had every faith as an antidote for snake poisoning.

Symptoms—Instantaneous pain was complained of in the punctures, evidently of an unusual type his own expression being that it was "fiery," and the wounds bled. Within one and a half minutes he had himself incised 4 of the 5 punctures with a lancet (which I am informed was quite clean, and sterile, having been boiled, and not used for any purpose subsequently). This is important in face of certain reports that have appeared. After incision the antidote which was a fluid was instilled into each wound. The 5th puncture was overlooked. Within 5 minutes all local symptoms had disappeared, the "fiery" pain relieved and bleeding had stopped.

Mr Fox was not in the least degree alarmed, having implicit faith in his remedy.

Nothing further was noticed till about 2 P.M., when he complained of pain in the pit of the stomach, which he took to be stomach-ache and

associated with his lunch. It was sufficiently disagreeable to cause him to take a "lot" of neat brandy, after which he had eructations, but this pain persisted until his admission to hospital. At 2-30 he said to his friend "I've got some slight symptoms" and when asked what these were he said he had "pins and needles" in his legs. He and his friend were walking about and his friend began to notice that Mr Fox tipped slightly, over little irregularities in the ground as though intoxicated. This uncertainty of gait increased and he next complained of nausea which culminated in actual vomiting at 3-30 P.M. About 4 P.M. he complained that his vision was affected (but there was no sign of ptosis then noticed) and his gait was pronouncedly "drunken" in type.

About 5 P.M. drooping of the eyelids was distinctly evident. He next complained of "sore throat" and his speech was obviously affected. At 5-30 he sat down voluntarily, and it was noticed that his head drooped forwards. He complained that breathing was becoming difficult, and his eyes were now nearly closed.

His friend was now thoroughly alarmed in spite of Mr Fox's sanguine composure, and took him to hospital where he arrived at about 7 P.M. When seen by Captain Green-Armytage I.M.S. and Assistant-Surgeon Warner, it was noticed that the patient was conscious, though apathetic and dull. He sat on the couch in a hewed posture, his head dropped forwards, and his arms limp and extended his wrists and ankles dropped. He was unable to stand. His lids were dropped and his speech thick and blurred. His face in the waning evening light appeared of a slate-grey pallor. He expressed a wish to be left alone, and complained of constriction, and a feeling of swelling in the throat. He had no anaesthesia though numbness was a subjective symptom. His pulse was slow, full, and bounding and his breathing similar to that of a diabetic coma patient. At a later stage he was unable to speak, his paralysis generally increased and he died at 8 P.M. ten hours after being bitten.

Treatment—He was ordered 10 grain of styrchnine hypodermically and brandy internally.

Remarks—The case was a very typical one of Colubrine poisoning and presented nothing but what was confirmatory of previously reported cases. Abdominal pain appears to be a characteristic feature of poisoning from the *caeruleus* venom, which is not specially evident, if evident at all in other Colubrine toxæmiae. The only other cases of fatal krait bite known to me (two) died in 12 and 5½ hours respectively.

* The identification is unavailable.

COCAINE EATERS OF BOMBAY

BY A W TUKE,

MATOR, I M S,

2nd Presidency Surgeon, Bombay

THE medical officer of the jail in Bombay will daily meet with one or more new prisoners arrested for either being in possession of, or selling cocaine or for theft, who are cocaine eaters. No accurate list of cocaine eaters has hitherto been kept, but from February 25th, 1914, when I took medical charge of the jail up to May 11th, 1914, there have been 55 prisoners who acknowledge that they are addicted to the drug. This will give some idea of the prevalence of the custom amongst the inhabitants of Bombay.

As to its prevalence amongst the upper classes, I have no information, but it is a custom certainly by no means confined to the poor and uneducated. The photograph shows some average specimens of cocaine eaters, but there is nothing about their appearance in the photograph which indicates that they take the drug. They look much like other prisoners of a similar class. Their physique is nearly invariably poor, they are feeble in body, often anaemic but seldom markedly so; their faces look puffy, their complexion is pale, but there is not, I think, any complexion peculiar to cocaine eaters. Their expression is that of persons who have passed many sleepless nights, heavy dreary and dull looking. Such as a rule they are when first seen in the prison. With deprivation of the drug their appearance becomes similar to others of their class.

Cocaine here is always eaten with *pan supary*. Consequently the mouth, teeth, and the tongue are of the red colour common to those who eat *pan supary* alone without the addition of cocaine but there is a difference, and this difference will enable the observer to make a fairly accurate guess in combination with the dull facial expression that a person is a cocaine eater. The difference is this that a cocaine eater has no regard for the cleanliness of his mouth and teeth. The teeth are stained a dark reddish or nearly black colour. They always are very dirty. They obviously never receive attention. Another point is that the dorsum of the tongue is coated with a dirty dark coloured fur. The reason of this is perhaps that the cocaine eater never cleans his tongue but a more potent reason is, I think, that owing to the anaesthetic effect of cocaine on the mucous membrane of the tongue, the eater uses much more lime in his *pan supary* than he would if the membrane was more sensitive. The lime has a caustic effect and hence the thick reddish-brown coloured fur. The tongue soon becomes as the tongues of other persons in prison, but I have seen the remains of the colour nearly a month after deprivation of the drug.

Sex—Few women eat the drug, but a good many seem to be connected with the retail trade. I have not heard of any young girls taking it.

Race and Caste—Amongst the numbers many are Mahomedans. The lowest caste of Hindu do not seem to become cocaine eaters. I have met with no Pairs or Native Christians who take it.

Of a total of 55 eaters, 33 were Mahomedans, 18 high caste Hindus and 4 low caste Hindus.

Occupation—Whatever the former occupation of those who eat the drug may have been before they acquire the habit, they mostly, if poor, join the ranks of thieves, when they take it in any considerable quantity. Eating it renders them unfit as a rule for hard and regular labour, and to obtain cocaine at its present price of annas six a *pudi* (about 2 grs.), they are forced to steal or to go without.

Age of Cocaine Eatres—So far I have myself met with few boys who are addicted to the habit, but at the David Sassoon Reformatory, the Superintendent informed me that in his opinion nearly 50 per cent of the boys sent to the Reformatory have been cocaine eaters to a greater or less extent. He ascribes this in many cases to their being taught the habit by their parents' servants. Amongst several hundred children between the ages of 9 and 14 applying for certificates to work in the mills I have only met with four children who had the typical expression and mouths of cocaine eaters. Another reason why boys become cocaine eaters is that elderly eaters often employ them to thieve for them and thus supply them with the money necessary for the drug. I have never met with any one much over the age of 55 years who has taken it regularly.

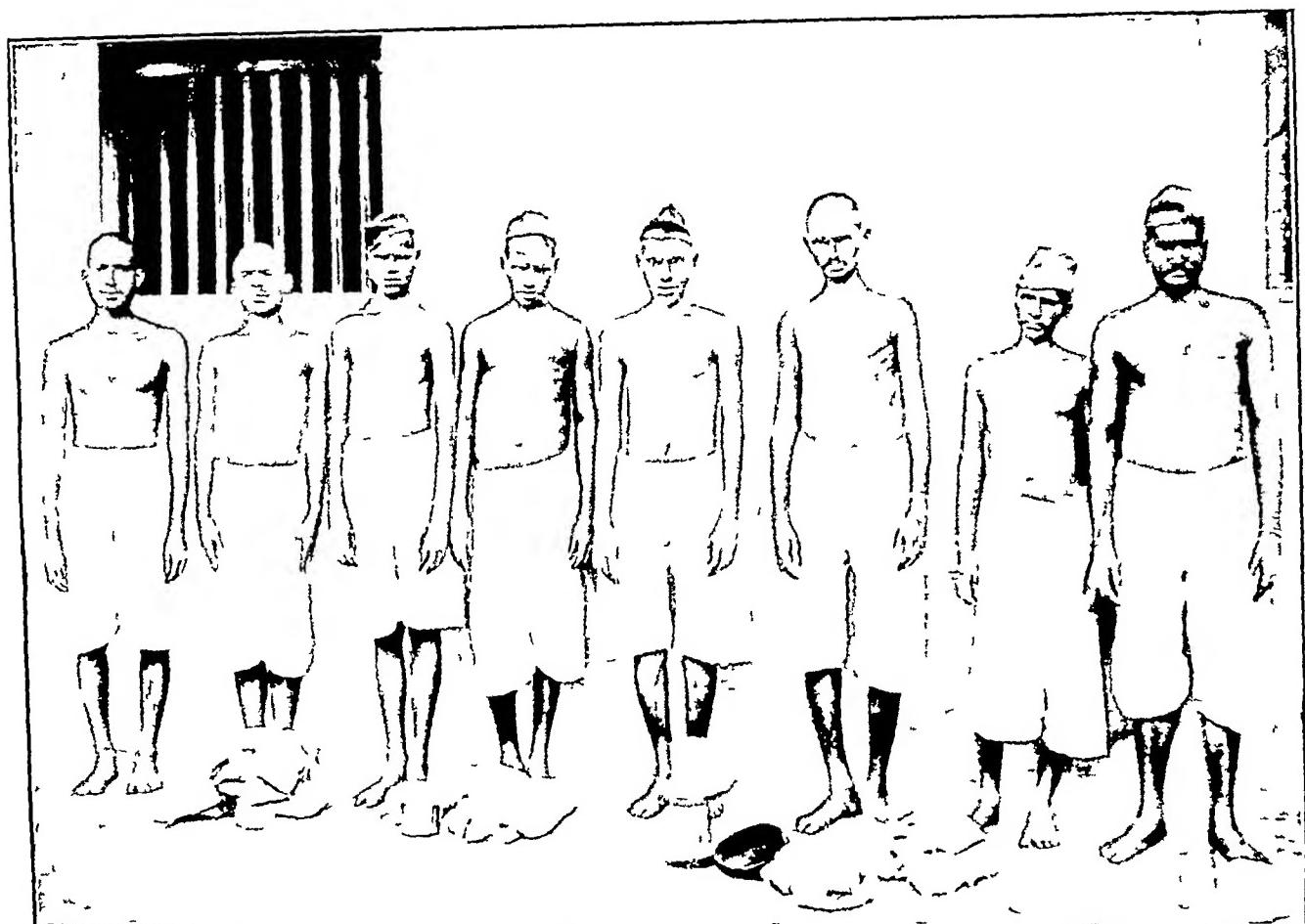
The Pleasures of Cocaine Eating—The chief pleasure lies in the sensation produced in the mouth by eating *pan supary* and cocaine. Eatres say that their tongue and lips feel swollen and thick. There is also a smarting sensation in the tongue. When chewing I am told there is a marked objection to talking, the mouth becomes full of saliva and there is a pleasant sensation as if the mouth was full of butter, which spoken words would immediately dissipate. Some do not swallow the saliva and escape the internal effects of the cocaine.

There is a feeling of heat all over the body described as pleasant and the person sweats. The hallucinations are agreeable the eater imagines himself a rich man or may be a nawab or a rajah. After eating the drug he walks along the road with eyes on the ground looking from side to side in the search of money or jewels. He picks up stones and other articles thinking them to be rupees or articles of value, these he may carry on his person till he recovers from his dose or is told that they are valueless.

COCAINE EATERS OF BOMBAY

BY MAJOR A. W. TUKE, I.M.S.,

2nd Presidency Surgeon, Bombay



During this time he is afraid of being robbed and fears every one he meets in the streets, he is what is called "bhadak" (shy). This condition is of short duration, about half-an-hour as a rule.

Afterwards he is restless and sleepless and may walk the streets continuously without feeling any fatigue.

I cannot discover that it is ever eaten for an aphrodisiac effect. Sexual desire is actually lost and cocaine eaters are generally childless.

How the Habit is Acquired—The habit is generally acquired from friends, but in the case of boys, as I have said servants are sometimes responsible.

How the Cocaine is Obtained by the Latas—Cocaine is obtained from itinerant sellers in the streets. The eater having bought cocaine must then get his *pan supari* from elsewhere. It is now sold in the streets at the price of annas six a *pudi* and less than this cannot be got so several eaters will often combine together to buy a *pudi* between them afterwards dividing it up. The retail seller proclaims his whereabouts to his clients by calling out "Lao Lao" or "Pisa Lao", but owing to the present police vigilance he is careful not to sell to any one he does not know.

Quantity Eaten—The amount eaten varies daily according to the amount they can spend on it. From what I can gather 60 a day is by no means an unusual quantity to eat.

The Effect of Withdrawal of the Drug—Unlike opium-abstinence does not create a painful craving. Withdrawal I have never seen followed by any symptoms whatever but I am told flatulence and constipation are common.

General Remarks—Cocaine eaters are neither noisy nor violent, the opposite may be said for them. It renders a man a useless member of society incapable of skilled or continuous labour, a thief and impotent. It does not as does alcohol when taken in excess render him a savage. The very eaters themselves recognize the bonds that bind them and would I am sure welcome the day when it can no longer be obtained at any price, and this, it is to be hoped, will be the eventual result of the suppression of illicit importation.

My thanks are due to 1st Grade Sub-Assistant-Surgeon Bhikhabhai Haribhai for his assistance in obtaining the information from prisoners and also for photograph taken by him.

PLAQUE JOTTINGS*

BY F POWELL CONNOR, F.R.C.S., D.T.M. & H.,
MAJOR, I.M.S.,

Officiating Civil Surgeon, Chapra

WF in Chapra are all familiar with plague, but there are one or two clinical aspects of the

disease that I would like to talk about and also its treatment.

Plague is generally described as appearing in three main forms (a) Bubonic (b) Septicemic and (c) Pneumonic. But, from my experience of the disease, I would say that it is a much more protean disease than this. A type which has recently been quite common in Chapra is the diarrhoeic type—most of you must have seen some cases. The patient is prostrated, with vomiting severe diarrhoea and high fever and a fatal issue may result in one to three days. This is really a variety of the septicemic type. The other common types are also combined in various ways and so it is possible for one, who has seen a great number of cases of plague to be doubtful at first as to the real nature of the disease in a particular case.

As examples of this I will mention to you two unusual types of bubonic plague that I have seen. A case occurred in Gaya, where a young man in a house infected with plague, showed me a small gland near the anterior axillary fold. It was as big as a pea, very superficial and very tender. He had no fever and I told him not to be in the least alarmed. For four days this gland remained of the same size and he had no fever. On the fifth day he had a severe rigor, the gland grew rapidly in size and the other axillary glands became enlarged and 24 hours after he was dead. Such a case you will find described in no book. Another aberrant but commoner type of which I have seen several cases here in Chapra and in other parts of Bihar, is that in which the disease begins with a rigor and high fever but no enlarged glands appear for 4 or 5 days. These cases are often mistaken for malaria and indeed they closely resemble it clinically, but you must always be suspicious of such cases in the plague season when the temperature does not break within 12 hours. These cases also always have very severe pains in the lumbar region and very commonly also the eyes are markedly congested.

Multiple enlargement of glands in plague is commonly interpreted as a good sign. It is true that such cases often survive, but the reason of this is I think, that it generally means that the attack is not a severe one or that a fatal issue has been stayed off by treatment. In a case I have been attending recently, the right submaxillary glands were first affected (on the fifth day of the disease), then, in order, in the course of 3 or 4 days, the left sub-maxillary and upper cervical, the right inguinal and femoral, the left epitrochlear, the left inguinal and femoral and the right epitrochlear. Curiously the axillary glands were never affected. In this case the right upper cervical glands suppurated at the end of two weeks and synchronously with this all the glands which had been previously affected (some

* (Read before the Chapra Medical Club on April 19th, 1914)

of which had now regained their normal size) became again large and tender. It is not easy to account for this curious phenomenon, but it must be due to a feiment in the blood, or hyperactivity of the leucocytes caused by the suppuration. The left epitrochlear gland suppurated two days later, but the other glands all gradually subsided once more. Another curious feature occurred in this case—the menstrual period was due and though the woman was desperately ill, it occurred and the discharge was excessive. The kidneys were also affected, as was evidenced by severe albuminuria, the liver and spleen were not apparently enlarged. The heart, as is almost always the case, was severely involved, there was slight pericarditis and the rhythm resembled that occurring in the late stages of diphtheritic toxæmia. The presence of toxic myocarditis was evidenced by the fact that the slightest movements of the patient produced severe anginal attacks, which were best relieved by deep and firm pressure over the cardiac area. This continued for over a week and if such a patient had been allowed to sit up in bed, I am convinced that cardiac failure would have followed. This same patient has lost one eye by suppuration and the other eye has had a narrow escape. You will see how widespread are the results of plague toxæmia and you will understand how difficult it is to treat such a case without intelligent and incessant nursing.

The involvement of the eyes in severe cases of plague is common and the chain of signs and symptoms is characteristic. At first all that can be seen is conjunctival injection. This is followed by some increase of tension and evidence of ciliary involvement. If the inflammation progresses deep-seated pain in the eyes and headache are complained of. The tension then becomes still higher, the cornea becomes a little steamy and yellow-white spots of purulent exudation appear in the iridic angle, at first small, but gradually increasing in size. This exudation first appears at the lowest part of the anterior chamber, but gradually spreads all round its periphery in a bead-like manner. If paracentesis is performed clear aqueous fluid escapes, in which no plague bacilli can be found and the pain is a good deal relieved, but the purulent exudation is found to be very inspissated and cannot be readily evacuated. Resolution may occur even at this stage but often the eye is lost by a slow process of suppuration, the purulent droplets merging together in the anterior chamber. Presumably this condition is due to specific panophthalmitis due to infection by plague bacilli.

There is one terrible form of cellulitis in plague cases with cervical buboes, which many of you must have seen. I have seen several cases. It occurs usually about the 4th or 5th day. Within 2 or 3 hours, and owing apparently to the sudden giving way of the resistance of the patient's

tissues (and possibly also to a secondary septic infection), the whole neck and upper part of the chest becomes enormously swollen and indurated—like a case of severe Angina Ludovici—breathing becomes difficult and a fatal issue rapidly follows. The suddenness with which this can happen is most startling even in a case that may appear to be doing fairly well.

There have not been many cases of Pneumonic Plague in the recent epidemic here. It is a condition which is not always easy to diagnose. The patient when seen is generally sitting up in bed, he is in great distress and complains of severe pain in the back and at the bases of both lungs, he is exceedingly restless and will not lie down. Often the patient is quite conscious. Patches of pneumonic breathing are found at the bases, generally in both lungs, but the signs are not marked and the high temperature and grave condition of the patient are quite out of proportion to the amount of pneumonia present. A certain amount of expectoration occurs and the sputa are often tinged with bright blood. I have never seen the "prune-juice" sputum described in books. This has been copied from an erroneous description by people who write books without seeing cases. These pneumonic cases may die within 24 hours but generally succumb on the 2nd day.

These notes on some aspects of plague deal with conditions that must be familiar to all who have seen much of the disease. It has been said that there is nothing new under the sun. You will find excellent clinical accounts of plague in old Hindu and Mohammadan writings, for as you know several epidemics of plague have occurred in India in past centuries. The loss of vision that sometimes results, the fever, heart affection—it has been called "the palpitating disease" in the past—and all the commoner symptoms are mentioned.

With regard to the treatment of plague I would like to say a few words.

The toxæmia produced in severe cases of plague is almost as grave as that produced by the bite of a poisonous snake and the treatment must be prompt and energetic. The effects of the poison are manifested in various ways, which we cannot go into here and much of the treatment must be symptomatic. The organ which throws out most vigorous distress signals is the heart and the great majority of deaths are from heart failure, sometimes quite early in the disease and at other times when the febrile stage has passed. This fact cannot be too emphatically impressed upon those responsible for the care of the patient, as even slight exertion, such as sitting up in bed, or indiscretions in diet may rapidly lead to a fatal issue. I cannot go now into the details of the various symptoms which have to be treated and the various cardiac

stimulants that are of value and so on—most of you are already familiar with these. But, I should like to discuss here the possibility of attacking the actual plague bacillus in the patient's blood and tissues. I believe that a good deal can be done in this direction by the use of Iodine. I have been using this drug in a variety of ways for nearly 3 years.

The administration of Iodine by the mouth in small doses, preceded by a purgative, has been much talked of lately. I have tried it in a number of cases and have come to the conclusion that, though it may be of use in the less severe cases, it does little to save the fulminating cases. Realizing these facts, I tried intravenous injection of m V-VII of Tinct Iodi over two years ago, and I have certainly had some most striking recoveries with the treatment. It is by no means infallible and if the treatment is not begun early and intelligent nursing provided it may be of little use. But it is something to know that a potent drug like Iodine can be injected repeatedly into the blood stream without producing any untoward effects. The drug is introduced directly into a vein, after dilution with about a drachm of distilled water and the whole operation need not occupy more than a couple of minutes. I prefer introducing the hypodermic needle into the saphenous vein, just in front of the internal malleolus. The drug undergoes more complete admixture in the blood stream in this way, before it reaches the heart and the delicate capillaries of the lungs than if it had been injected into one of the veins at the elbow. The number of doses must depend on the progress of the case, but as a rule it is not wise to inject it more often than twice in a day.

I have frequently also injected Tinct Iodine directly into the substance of plague glands and this often seems to have the effect of allaying the inflammation.

It is difficult in bad cases to know what to do when the eyes are severely involved and I have contented myself with treating the various signs and symptoms as they appear. Paracentesis of the anterior chamber often gives a good deal of relief and is still more valuable when hypopyon is present. Many of the eyes recover under such treatment. Recently however I had a patient whose left eye suppurred and she died with symptoms of meningitis, probably due to extension from the affected eye. If removal of the eyeball had been possible, her life might have been saved.

These remarks are only intended as introductory to a discussion on the subject and are in the nature of jottings. The subject is much too wide a one to discuss at all fully in the space of a short paper.

OSSEOUS NEW GROWTHS AT THE ELBOW JOINT FOLLOWING INJURIES TO THE JOINT—NOT NECESSARILY DISLOCATIONS

BY J. A. SHORTEN,
CAPTAIN, M.B., I.M.S.

In this paper I wish to draw attention to a not infrequent complication of injuries to the elbow-joints, one which has been recognised only since the introduction of radiography. The condition has been referred to at various times during 1905 and 1906 in the *Archives of the Rontgen Ray and allied Phenomena Journal*. It has also been dealt with by Mr Jones and Dr Morgan of Liverpool, in a paper entitled "On Osseous formations in and about muscles due to injury". More recently, Mr Greig of the Dundee Royal Infirmary, has given an account of three cases in an excellent and instructive paper (*Edinburgh Medical Journal*, October, 1908).

The condition is common enough to be taken into account in the diagnosis of injuries to the elbow-joint. In pre-radiographic times no doubt the occurrence of this complication was looked on as evidence of an overlooked fracture and either carelessness or inefficiency on the part of the surgeon who first saw the case.

The condition is more common at the elbow than at any other joint. Personally I have never seen it elsewhere. It may follow backward dislocations of both bones, inward or outward. Dislocations of one or both bones (it probably never occurs with dislocation of the radius), or, severe sprains without dislocations. In fact, I presume, it may follow any injury to the elbow-joint sufficiently severe to cause tearing away of portions of the attachments of any of the muscles inserted close to the joint. The muscle most commonly implicated is the *brachialis anticus*. If there is a dislocation it is reduced, or if the injury is only a sprain the swelling and inflammation are treated by the usual methods. In either case the joint may appear to have recovered from the injury in two or three weeks. Then stiffness with limitation of flexion and extension gradually sets in and after a time a bony tumour appears in front of the joint.

The following cases collected by me while acting as X-ray Specialist, 2nd (Rawalpindi) Division, India, illustrate the sequence of events, the clinical characteristics and the pathological conditions typical of this complication—

Case 1—M., a fairly well developed healthy man fell off an Army transport cart on the 16th November 1912, alighting on his right elbow. The injury caused immediate loss of power in the affected limb. On 17th November 1912 he was admitted to hospital. There was then considerable pain and swelling in the joint, but no displacement of the bones could be detected. The hospital assistant, who saw the case in

the first instance shortly after the accident, also stated that there was no dislocation. The case was treated with evaporating lotions and afterwards by fomentations and massage. A skiagram taken on 21st November 1912 showed nothing abnormal. He was detained in hospital however, as free movement could not be obtained.

He came under my observation on 26th November 1912. Pain and general swelling had by now disappeared, but, a small hard lump was felt in the bend of the elbow to the inner side of the tendon of the biceps. Pronation and supination were normal, but there was considerable limitation of flexion and extension, the range of these movements being about 30°.

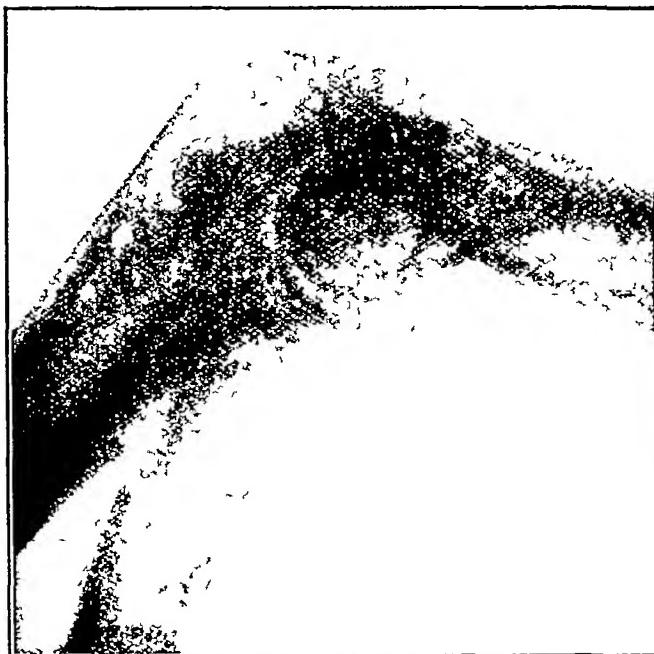
A skiagram taken on 9th January 1913 showed an oval shadow in the bend of the elbow in front of, and quite distinct from the lower end of the humerus. A faint shadow extended upwards from the region of the coronoid process of the ulna to join the first mentioned shadow.

As the bony tumour seemed fairly well defined I decided to remove it. The operation was performed on 13th January 1913, four weeks after the original accident. An incision 3 ins long was made on the line of the

The man is still in the army and has not returned to hospital.

Case II—Dr F R, H A, aged 24 years, a well developed healthy man, admitted to Station Hospital, Sialkot on the 3rd June 1910, with a history of having fallen backward, striking his left elbow against the stone pavement. He was seen by the Assistant Surgeon on duty who stated there was a backward dislocation of both bones of the forearm which was easily reduced by traction. The case was seen next day by the R A M C officer on duty, who stated that there was much swelling and pain, flexion and extension were somewhat limited, and pronation and supination were normal. The joint was treated by rest and evaporating lotions and passive movements were commenced after seven days.

On the 16th June 1910 the movements of flexion and extension were found to be much impaired and a hard lump could be felt to the inner side of the elbow joint in the region of the internal condyle and the humerus. This was not affected by movement of the forearm. Previous to this it had been noticed that pain and swelling were most marked in this region. The limitation of flexion and extension became more marked.



CASE II.—Dr. F. R. H. A.,—Left elbow



CASE IV.—Police constable Adalut Muhammed,—Left elbow

brachial artery and carried down to the muscles. The vessels, nerve and tendon of the biceps were pulled outwards by retractors. The *brachialis anticus* muscle thus exposed was split, and the bony lump separated and removed by the aid of a blunt dissector. The bony lump was within the sheath of the muscle and seemed to be incorporated with its fibres. The inner half of the muscle for about 2 inches upwards from its insertion had to be removed. The growth measured $2 \times 1\frac{1}{2} \times \frac{1}{2}$ inches and was distinctly calcified only in its upper part, a fact which was already shown by the radiogram.

Microscopical examination showed the mass to consist of soft fibrous tissue and muscular fibres. These were signs of calcification in parts, but there were no haversian systems.

The stitches were removed and massage and passive movement commenced on the eighth day. He was discharged to duty with perfect movement in the joint on 18th February 1913.

A skiagram taken shortly before his discharge, with the exception of a faint shadow in the neighbourhood of the coronoid process of the ulna, shows nothing of the original shadow.

Examination under a general anaesthetic did not elicit free movement. The condition was thought to be due to callus from an overlooked fracture.

The case was seen by me on 13th July 1910. Flexion and extension had almost disappeared and the forearm was fixed at right angles to the arm. Pronation and supination was normal. A skiagram showed an oval mass of soft bone extending upwards from the coronoid process by the ulna in front of the lower end of the humerus.

The case was now removed to hill station where on 20th August 1910 the joint was broken down under chloroform and a full range of movement was obtained. Afterwards manipulation, passive movements and massage were tried, but the joint again became stiff after a week or two.

The patient was then anaesthetised and the joint again broken down with the same result—good movement for a couple of weeks with gradual limitation of flexion and extension afterwards. On the 30th October 1910, four months and 17 days after the accident, a second skiagram was taken. This showed that the bony mass had become smaller but denser.

The joint was broken down subsequently on two occasions, and on one occasion an effort was made to keep it fully extended on a splint, but this line of treatment caused so much pain that it had to be discontinued. The man was subsequently discharged from the service.

Case III—Corporal D R G. A., aged 34 years, a well developed healthy man, fell down a hatchway on the 25th June 1911. The distance was about 12 feet and he landed on the palms of his hands. Immediately afterwards he felt severe pain in his left elbow which he was unable to move. There was much swelling. He was treated on board ship and the swelling gradually disappeared except in front of the arm just above the joint. There was no dislocation. After a while the swelling became smaller and harder and the movements of the joint more limited.

When seen by me on 16th September 1911, the left arm from the lower half of its extent appeared to be much larger than the right. A large hard mass was felt beneath the biceps muscle and tendon extending from the bend of the elbow-joint to the level of the origin of the brachialis anticus muscle. There was no pain or marked discomfort. Flexion and extension were limited to about 20°, the arm being held at right angles to the forearm for preference. Pronation and supination were normal.

A skiagram showed that the swelling was due to a large mass of cancellous bone extending from the region of the coronoid process of the ulna and the neck of the radius to the upper limit of origin of the brachialis anticus muscle. The front of the lower end of the humerus and the coronoid process of the ulna appeared to be free from implication, but the mass seemed to spring from the humerus higher up.

An operation at which I was present was performed on 24th October 1911. An incision was made to the outer side of the line of the brachial artery extending from the origin of the brachialis anticus to about an inch below the bend of the elbow. The brachial vessels and median nerve were pulled inwards and the biceps, which was flattened out on the surface of the mass, outward. The brachialis anticus muscle could not be defined. The bony mass was found to have a fibrous capsule. This was incised longitudinally and stripped off by means of a periosteal elevator. The bony mass was found to be firmly attached to the front of the humerus for the whole extent of the origin of the brachialis anticus and was separated by chiselling. The bone was soft and spongy and very vascular and some difficulty was experienced in removing it. Removal was practically complete and full flexion and extension were obtained. Though the wound suppurated a little, it healed up perfectly in three or four weeks. The bony swelling recurred however.

A second skiagram showed that the whole mass of bone had grown again, presumably from the osteoblastic tissue left behind. Movements became even more limited than before. I have no details as regards the later history of this patient as he was transferred to the Home establishment.

Case IV—Police Constable Adalut Muhammed. He came to me on 6th July 1910 with a history of having had a lateral dislocation of both bones and the elbow-joint a month previously. This had been reduced by the Civil Surgeon of his district. The elbow joint was fixed at a right angle, there being scarcely any movement of flexion or extension. Supination and pronation were practically normal. The skiagram shows a well defined shadow, extending upwards in front of the humerus from the coronoid process of the ulna. There is no apparent injury to the bones.

This man refused operation and was lost sight of.

This condition has been referred to as "traumatic myositis ossificans" by various authors on the assumption that ossification of the muscle due to injury occurs.

Let us consider the conditions actually present. Muscle is attached to bone either by means of connective tissue surrounding the terminal muscle bundles or through the intermediary of tendons or membranes. In one case the connecting tissue becomes continuous with the periosteum and in the other case the white connective tissue bundles of the tendons are prolonged into the bones as perforating fibres obtaining on their way a firm attachment to the periosteum. The periosteum consists of two layers. An outer layer composed of white fibrous tissue containing a large number of blood vessels and an inner layer containing elastic fibres. It sends perforating fibres of Sharpey into the bone, thus bolting the outer lamellæ together. Between the inner layer of the periosteum and the outer lamellæ are the osteoblasts or bone forming cells—more numerous in young and developing bones.

The special conditions obtaining in the case of elbow-joint are that the brachialis anticus is a powerful muscle with a broad origin and a narrow though not markedly tendinous insertion. As a result of a sudden and severe strain some of the fibres of insertion are detached, tearing or pulling away the periosteum from the bone and perhaps even rupturing or tearing off some of the superficial lamellæ of the bone through the medium of the perforating fibres. Some of the blood vessels, too, are ruptured probably at the points where they enter the bony canals. At the same time canals may be opened up between the muscular fibres or in the fascia surrounding the muscles. Blood escapes into these spaces, forming a scaffolding for the production of the bony structure. According to the old views of the development of bones the presence of osteoblasts would be explained by their dislodgement from the osteoblastic layer of the periosteum. The researches of McEwen however throw some doubt on the presence of osteoblasts in the periosteum. In the latter case they must come from the superficial lamellæ of the bone or perhaps in the case of severe injuries from the opening up of Haversian canals. This fact may account for the comparative rarity of the complication for some degree of injury to the periosteum must take place in the case of every dislocation.

In any case the osteoblasts lying in a suitable pabulum soon produce 'callus'. The process is the same as in any ordinary fracture. The bone thus formed is at first spongy in nature, but later on becomes hard. Case II shows this process, the shadow in the second skiagram being much smaller and denser than that in the first.

Theoretically the bony development may take place within the muscle as in the two cases operated on, or in the fascial spaces surrounding the muscle. In case I, muscular fibres were actually seen surrounded by the calcifying osteo-

genetic tissue and the whole mass was within the muscle sheath—the epi-mysium

In case II, the whole muscle appeared to have been converted into bone. There was a fairly strong fibrous capsule.

As to the name traumatic myositis ossificans is certainly wrong. There is no evidence of the inflammation of the muscle. On the other hand, it is wrong to say that muscle has nothing to do with it as I have proved that the calcification may take place between and among the muscular fibres.

Traumatic myo-osteogenesis would be a better term as it indicates that muscle has something to do with the form and extent of the resulting bone.

As regards diagnosis, attention should be paid to the following points—

(1) There is a history of a dislocation or severe sprain with a gradually increasing stiffness of the joint coming on from two to three weeks after the original injury.

(2) There is usually considerable limitation of flexion and extension while pronation and supination are normal.

(3) It is usually possible to feel a bony tumour in front of the humerus at the lower end and it may be possible to move it independently of the bones.

(4) A skiagram will show the position and extent of the shadow *as soon as calcification has occurred*.

The treatment of this complication resolves itself into (1) the treatment of the original injury and (2) the treatment of the condition itself. In the case of dislocations of the elbow, if the case be a recent one, ordinary manipulation should be employed. In less recent cases when there is much deformity, or when the tissues have lost their elasticity on account of infiltration by inflammatory exudations, etc., open operation is preferable to violent manipulation. The operation described by Greig—an incision along the inner or outer margin of the triceps tendon so as to open the joint, the bones being slipped into place by means of a smooth periosteum elevator—seems to be simple and satisfactory. Passive movement and massage in all cases should not be commenced too soon and should be very gentle at first.

Once osteogenetic tissue has been thrown out it is a bad policy to attempt to remove it immediately. All writers on the subject agree that like provisional callus the bony tissue may to some extent become absorbed. In any case as shown in case II the bone becomes smaller and denser. This means diminished vascularity and a smaller number of osteoblasts and consequently less power of forming new bone. The mass, too, becomes better defined and more easily removed. If an attempt is made at removal in the early

stages there is danger of young osteogenetic tissue being left behind and a consequent recurrence as in case III. The correct line of procedure is to wait until the skiagram shows that the mass is hard and well defined—4 to 6 months perhaps—and then to operate. Meantime the arm should be kept in a sling and the patient should be instructed not to use it to any extent or put any severe strain on it.

The bad effects of forcibly breaking down the joint are shown in case II where no improvement occurred after repeated manipulation.

THREE CASES ILLUSTRATING UNUSUAL SEQUELÆ OF MALARIAL FEVER DUE TO *Plasmodium falciparum*

BY R. DOWDEN, M.D. (T.C.D.) D.M. (Liverpool),
Medical Officer, Federated Malay States

THE three cases of which details are given below seem to be worth recording as two of them have a direct bearing upon the medico legal aspect of malarial fever and its sequelæ, and the second tends to show that cerebral lesions after the acute symptoms of malaria are at an end are more permanent in their effects than many of the text-books would lead one to suppose. But little emphasis has been laid on the fact that malarial fever is a common cause of insanity and *à propos* of case No. I I have seen a quotation from a Ceylon paper which professed to be the opinion of a medical man to the effect that it never is a cause. It may be argued that in a case III, the cause of the insanity was the cooly's sexual habits rather than the malarial fever, but I believe that this is not so.

So far as can be ascertained, the man was mentally normal up to the time he joined the Estate at Batu Gajah, and it was after repeated attacks of malignant malaria that his symptoms of insanity appeared, while he has made a recovery which is almost complete under appropriate treatment.

Dr Samuels Medical Superintendent of the Federal Lunatic Asylum Federated Malay States, assures me that malaria is a common cause of insanity and my thanks are due to him for his kindness in supplying me with the notes of Case No. III, while in the asylum.

Case No. I—A quiet elderly Chinese Kapala (headman of coolies) employed on a small mine near Bidor, Batang Padang, Perak, Federated Malay States, was admitted to Batu Gajah gaol while awaiting trial in the High Court on a charge of causing "grievous bodily hurt" to two of his own coolies.

The assault was a sudden one without any apparent cause and the question arose as to what this man's mental condition was at the time of the assault. On admission to the gaol he was

found to be emaciated, he had an enlarged spleen and the usual signs of chronic malaria

Plasmodium falciparum were found in his blood. He was treated for this condition and rapidly improved. When questioned, he made the following statement quite freely and concealed nothing so far as one could judge:—

"I am a *Kapala* on a Chinese-owned mine near Bidoi. I have worked there for four months. My duty was to find the coolies, and I received ten cents for every coolie who performed a day's work, we found plenty of tin and wages were regularly paid. The coolies complained of nothing and were all quite friendly. I can only remember two coolies leaving the mine. They left because they said they were sick. I think they had fever but I am not sure. All the others kept in good health, we slept in a large *Kongsie* (shed). The other coolies all slept together, but I had a room to myself shut off by *attaps* (dried palm leaves) from the others. I could easily hear what was said outside. All the time I lived at Bidoi I was more or less ill. I had constant fever. I used to take Chinese medicine, but it did me no good.

I remember one night when two of the coolies were hurt. I struck them with a *parang* (long knife). That night I had high fever, I was very hot. I heard the two men in question talking about me in the *Kongsie* outside my room as I lay on my bed. They used foul expression about me. I waited some time. All the other coolies were quietly asleep. Two men near me kept on talking, they abused me. Previously I had no quarrel with them, I was perfectly friendly. I was extremely angry to hear them call me names, but I was not surprised. I felt no surprise even though I knew they had no reason to abuse me. I felt enraged. Finally I got up and seized a *parang* and cut them wherever I could. As soon as I had cut them I went back to bed and I felt quite satisfied. No one told me to attack them. They were lying on their beds. I did it because they kept on saying foul things about me. I know they say they were asleep at the time and did not say anything. I heard them speaking. The other coolies woke up and I was arrested by them. I did not want to run away as I was satisfied with what I had done.

After this I don't remember much of what happened. I was too ill. I was carried by the coolies to the police station, I was too ill to walk. At the time I felt satisfied as soon as I had hurt them. I am glad now that they are not dead.

All the coolies in the *Kongsie* agreed that there was no reason for the assault. The *Kapala* was quiet and friendly with every one. The injured men say they were asleep, had not been talking and were awakened by the blows of the *parang*. The Medical Officer, of Tapah hospital, Dr. Morgan, found the *Plasmodium*

falciparum in the assailant's blood on the day after the assault.

This man repeated the same story without any essential variation to the Inspector of Police, the Magistrate and to myself on many occasions. He was discharged in the High Court on the medical evidence. A remarkable feature of his case is the stress he lays on his feeling of satisfaction after the assault.

Kaspai in his *Jurisprudence* remarks on the satisfaction felt by homicidal maniacs after the commission of an assault and the immediate disappearance of homicidal impulse. In the above case one must suppose, in the absence of any motive and from the evidence, that the accused suffered from malarial fever and on the occasion of the assault had delirium and auditory hallucinations, culminating in a homicidal impulse.

Case No. II—A Burmese woman, married in Rangoon to a Tamil, who brought her to Batu Gajah, was admitted to the Female Ward, Batu Gajah hospital, for malarial fever. Her husband states that she had been well up to a short time before when she got fever and on the morning of her admission to hospital she became unconscious.

On admission.—The patient is unconscious, reflexes absent, tongue foul and furred. Spleen enlarged slightly. Temperature 36.9°C. The blood examination shows *Plasmodium falciparum* ring forms. Three pints of normal saline solution, with forty grains of bilydrochloride of quinine dissolved in it was given by the continuous method into the cellular tissue of the sides of the abdomen and the rectum was washed out with a soap and water enema. For twenty-four hours the patient was unconscious and the pulse and heart were feeble. Strychnine and digitalin were given. In thirty-six hours she became conscious and able to take nourishment.

From this onwards she steadily improved, but was only able to express her wishes by signs. At first it was thought that she could not speak any language but Burmese. Her husband was sent for and he said that his wife spoke Burmese and Tamil fluently and that she could also speak some Malay. She was not able to read or write. She was a healthy woman and quite normal so long as he had known her. She never became unconscious, never had any fits, was always active, and until quite recently had never been ill in any way. She had complete motor aphasia and as she could not read or write no tests could be made in these directions. She understood all that was said to her, but she was unable to utter a sound. Her efforts to speak were most painful to watch. Various forms of treatment were adopted without result, although she gained in weight and strength. From the time of her admission her temperature remained normal or slight sub-normal. After six weeks her husband insisted on removing her from hospital to try Tamil medicine.

I regret to say I have been unable to trace them further. In none of these cases were temperature charts of any special interest, they have been omitted.

Case No III—A Tamil male coolie, aged about 32, was employed on a rubber estate near Batu Gajah for six months. During that time he did his work fairly well, but was occasionally sick from "fever". He did not come to hospital.

Suddenly one afternoon he left the estate, gave himself up at the Police Station, and demanded to see the Magistrate. The Inspector of Police took his statement and he was sent to the Batu Gajah hospital for enquiry into his mental condition.

On seeing him at the hospital it was found that he had a temperature of 39.3°C . His spleen was enlarged and he showed the usual signs of chronic malarial infection. Blood examination showed the presence of *Plasmodium falciparum* in various stages of development. He was detained in hospital and given quinine bishydrochloride ten grains three times a day in solution by the mouth, and six intra-muscular injections of ten grains of the same preparation in the buttocks.

In a day or two his temperature fell to normal and his mental condition was enquired into.

He stated—

"I have been employed on a rubber estate near here for six months past and during that time I was suffering from malarial fever. I came here from Ceylon where I had been employed in the house of a European (Eurasian?)."

There were two female children in the house. Once when I was bending down one of those children raised my clothes and both used to lay their hands on my genitals. They were five or six years age. I saw the lady of the house and Cingalese ayah with very little clothes on once or twice. When I saw this I used to masturbate myself. I did not assault the children, but as I have explained I have been guilty of indecent behaviour with them. I left that employment and I came to the Malay States. I have kept a woman and I do not masturbate myself."

Some other Tamil people followed me here from Ceylon and recently during the night, I have heard them say that they would give me up to the police because of my crimes with children in Ceylon.

I have not seen these people, I have only heard them speaking. The day I went to Batu Gajah Police Station I had fever, I left the estate and on the road to the Station I met some Tamil men who came from Ceylon, I knew them and I knew they had come from Ceylon, I recognised them, and they recognised me.

They did not say it to me, but I overheard them say that they would inform the police about my doings in Ceylon. There are no other

Tamil coolies from Ceylon, about Batu Gajah, except these men that I know of.

As I preferred to give myself rather than be informed on, I went to the station and gave myself up. These people followed me from Ceylon to do me harm and this and my crimes there weighed on my mind and made me unhappy."

Notes on this man's case kindly supplied by Dr. Samuels, Medical Superintendent, the Federal Asylum, Federated Malay States—

This man was admitted to the Central Asylum, Tanjong Rambutan, on December 23rd, 1913.

On admission he was a fairly well nourished Tamil. Temperature 100°F , pulse 100, regular. Tension diminished 10 cm. Height, 5 feet 3 inches, weight, 6 stones 8 lbs., leucocytes 11,562. Pupil equal—react to light and accommodation normally, and other reflexes normal. Tongue furrowed, spleen enlarged, urine normal, circulatory and respiratory systems normal.

Mental condition—He is depressed and introspective. Repeats the story he told the Magistrate and Medical Officer concerning his crimes in Ceylon. Acknowledges to auditory hallucinations, but does not recognise the "voices".

He slept well that night and took his food. Next morning he was still reticent, but by questioning him one could elicit all the former statements. A week later he is in much the same condition but says that a woman came to him at night and sat on his bed. She "interferes" with him. He now denies having ever masturbated. His memory is defective and he is disorientated in time and place. A week later he is still depressed and introspective. His tone of speaking is rather a whine. The women still come to him at night. They laugh at him and they "fall upon him and kiss him". This leads him to masturbation. He then adds "when I wake they are not there." He denies that the visit is a dream and maintains that the women do come to him. One month later he had improved as far as his depression was concerned, but is still troubled by visits from women. He now denied there is any truth in the stories he told of his life in Ceylon, but he says he was in the habit of masturbation up to a few weeks ago. He now does field work.

Towards the end of January, 1914, the women left him though he still suffers from auditory hallucinations, but he cannot distinguish what the "voices" say to him. In February he was very depressed and weak-minded. He declared that the visits of the women had ceased, but he denies that this had anything to do with his increased depression. Auditory hallucinations still present. After this he again improved, and said that he had been ill, that he had had fever, and the stories he told in Batu Gajah were due to insanity brought on by his fever. He still

masturbates, and at times he is "giddy." This lasted for a day or two days.

He says there is absolutely no truth in the stories he told of his indecent behaviour with children in Ceylon. He was employed in Ceylon as a 'boy.' There were three children in the house, one boy and two girls, but he had nothing to do with them. He never saw the mistress of the house or the ayah undressed. No men from Ceylon came to him in Batu Gajah. From this on he continued to improve and began to work in the kitchen. He gained 10 lbs weight and lost his depression. He still believes in the women's visit though they stopped some time since. There were three Cingalese women but that is all he knows about them. They used to undress and he had connection with them one after the other. He was kept constantly under observation, but was never seen to masturbate. This is remarkable for though crafty, the masturbator can usually be caught moreover. I believe the confession of masturbation was true. It is probable that he had always practised masturbation and when he became ill from malaria his ideas took a sexual turn and he began to build up delusions on his masturbation and his lustful thoughts towards the children, the mistress and the ayah.

One is tempted to believe that the nocturnal visits were more in the nature of dreams than hallucinations or delusions.

THE TREATMENT OF UNCOMPLICATED RETROVERSION OF THE UTERUS BY THE 'SLING' OPERATION

BY T. B. HANCE, M.B., B.C. (Cantab.), M.R.C.S. (Eng.), L.R.C.P. (Lond.)

LIEUTENANT, T.M.S.

Being, in substance, the Thesis read at Cambridge, for the degree of M.B., on August 10th 1912.

FOR some years past many gynaecologists have been impressed with the numerous disadvantages of long continued treatment of backward displacements of the uterus by pessaries.

The ills following the neglect of scrupulous cleanliness, the necessity of changing the instrument at frequent and regular intervals, the possible discomfort to the wearer, and the 'sentimental' objections to the carrying of such an instrument, all combine to make the discovery of a simple and efficacious operative measure a very welcome one, both to the gynaecologist and patient.

Since 1906 Dr W. Blair Bell, to whose courtesy I am indebted not only for permission to record his Hospital cases culled from the gynaecological reports of the Liverpool Royal Infirmary, but also for a very carefully compiled list of his operations performed in private, with their results and after-histories, has adopted a simple and efficacious procedure which appear to meet the demand alluded to.

The simplicity of the operation will be shown from the description, and its efficacy I venture to think will be demonstrated by the results of the cases I shall quote below.

The subject will best be considered if the operation be first described, the indications and contra-indications for its use be then discussed, and finally cases in which it has been employed quoted, with their symptoms, and wherever possible their after-histories.

It is always deemed advisable to get the patient under hospital or nursing home régime for a full 48 hours before the operation in order to permit of a thorough preparatory examination, and to ensure that the bowels should be thoroughly well emptied,—for constipation is an almost constant symptom in retroversion. An aperient, therefore, is administered on the night of admission, and throughout the next day the patient is kept on a light full diet, chosen for its small faecal residue, as well as for its nourishing properties. The night before the operation a smart purgative is administered, the pubes shaved, and a 2 per cent solution of iodine in rectified spirit applied to the abdomen from above the umbilicus to the upper limit of the vulva—on the Mons Veneris. The following morning, after the bowels have reacted to the aperient, a copious soap and water enema is administered, to complete the evacuation of the alimentary tract.

It is our experience that for this, as for other pelvic operations performed by the abdominal route, the most satisfactory anaesthesia is obtained by the administration of ether by the open method, with a preliminary injection of morphia gr. 1/4 and atropin gr. 1/100, the abdominal relaxation thus obtained being very good and the after effects being almost negligible.

A median sub umbilical incision of about four inches in length is made through skin and superficial fascia, and the aponeurosis of the external oblique cleaned, and the linea alba defined. This latter is then incised and secured in tissue forceps and the bellies of the two recti muscles separated. The parietal peritoneum and extra peritoneal fat is then pinched up in two pairs of forceps, which are held upwards on the stretch, and between them the incision into the peritoneal cavity is made.

The table is now tilted into the Trendelenburg position and, with two fingers of the left hand inserted first upwards and then downwards to guard the intestines from injury, the peritoneal incision is enlarged upwards and downwards to almost the entire length of the skin incision.

Some form of gynaecological retractor is now inserted into the wound, and the intestines are packed off from the pelvis by a rubber pack. Free access to the pelvis having thus been obtained any obvious cause of the displacement—e.g., peritoneal adhesions—is dealt with and the uterus freed. The round ligaments on either side are now caught up, and a stout silk ligature passed round each, by means of an aneurism-needle, at about $\frac{1}{2}$ inch from their uterine insertion.

These ligatures are secured by the assistant in his left hand and traction excited on them in the direction of the patient's feet, thus holding the uterus forwards and upwards. A pair of ligature forceps is next thrust through both layers of the broad ligament from behind forwards and outwards in such a manner as to perforate the posterior layer of the broad ligament near the corpus uteri, beneath the ovarian ligament, and the anterior near the spot where the ligature has been passed round the round ligament.

The ends of the ligatures on the round ligaments are grasped by the ligature forceps, and pulled back along its path followed by a loop of round ligament.

A similar proceeding is carried out with the round ligament of the opposite side, and the two loops of round ligament united to one another by a supporting loop of catgut, tying them together in the mid line, the silk ligature being now discarded.

These loops of round ligament are next permanently secured in their new position by fine silk sero muscular sutures uniting them to the back of the fundus uteri, on each side of the mid-line.

The uterus is now seen to be firmly tilted forwards by the round ligaments, and, further, the ovarian ligaments and the Fallopian tubes have now to pass outwards over a taut 'suspension' bridge formed by the loop of round ligament, with the result that all but extreme cases of prolapse of the ovaries are corrected at the same time, and extreme degrees only need a slight 'tuck' in the ovarian ligament by a silk suture to be completely held up. Any other contributory causes of retroversion which are found should now be treated, e.g., lax utero-sacral ligaments may be shortened—and any tubal condition dealt with as occasion demands.

The abdomen is then closed layer by layer, the parietal peritoneum, by a continuous cat-gut suture, the aponeurosis of the external oblique by some form of 'overlapping' suture and the skin closed according to individual taste, our experience being that the most inconspicuous scar is obtained by a continuous subcutaneous suture with a needle at each end, inserted as a 'criss cross' boot lace is inserted into a boot, and pulled out and tied off at the lower end of the wound.

If the patient be obese, or the tissues seem limp, 2 or 3 through and through supporting sutures are put in after closing the parietal peritoneum.

Though the operation has been detailed at some length, it will be seen that the essentials are few in number and easily performed, in fact, they may be summarized as follows—

- 1 Catch up the round ligaments in ligatures
- 2 Pass ligature forceps and draw back round ligaments
- 3 Secure loops of round ligaments in place.
- 4 Correct any co-existing abnormality

As regards after-treatment, shock is prevented by the administration per rectum of normal saline, 1 pint when returned to bed and at least 10 oz. every 4 hours for 24 hours afterwards. In this, as in the other round ligament operations, there is usually a considerable amount of 'dragging' abdominal pain on coming round from the anaesthetic, and morphin & grain is usually not withheld on the night after operation. Flatulence may be distressing the following day, due to the disturbing of the intestines on insertion of the pack, but it has been found that with the rubber pack, which does not injure the peritoneum, there is considerably less suffering of this kind. Complete comfort usually follows the doses of calonel and sodi bicarb, at 1 grain at hourly intervals which are given on the second evening and are followed by a saline purgative early next morning. This may be, and usually is, supplemented by one or more turpentine enemata during the night.

It now remains to discuss the indications for the employment of this operation.

Briefly, the advantages claimed for it are—

- 1 That it effectually corrects the retroversion, and at the same time cures prolapse of the ovaries with the accompanying oedema, pain, and dyspareunia.
2. That it is simple and easy to perform, and at the same time adequate.
- 3 That it does not interfere with the normal progress of a subsequent pregnancy and parturition.
- 4 That it does not tend towards the formation of peritoneal bands, with subsequent risks of intestinal obstruction.
- 5 That it is universally applicable and adequate except in such cases as are combined with prolapse.

Let us now consider other operative measures which have been described, and compare them with this 'sling' operation.

They are

Vaginal Fixation—This operation is not so easy to perform and is absolutely contra-indicated in the child bearing period, whereas the 'sling' operation, since the round ligaments enlarge and involute pari passu with the uterus should have, and does have, no adverse effect on subsequent labours.

Vaginal shortening of the utero-sacral ligaments has no correcting influence upon the associated retroflexion, and is incomparably more difficult to perform.

Alexander's operation is only applicable in simple mobile cases—often symptomless, and, moreover, the anteversion is less complete, since the pull on the round ligaments is lateral and not forwards in direction.

Ventral suspension has been much employed, but since the peritoneal adhesions are stretched during a subsequent pregnancy, and fail to contract during involution, they do not give support when support is most needed—in the puerperium. Moreover, these loose peritoneal bands invite intestinal obstruction, by the passage, and subsequent constriction round them of loops of intestine.

Ventration to the abdominal parieties cannot safely be performed in the child bearing period.

Wylie's operation—Intaperitoneal shortening of the round ligaments—admits of the correction of any co-existing disease, but is liable to the same objection, that was applied to Alexander's operation,—viz., that the pull is lateral in direction, and not forwards, and, therefore, that anteversion is less complete.

Gilliam's operation satisfactorily cures the displacement, but seems unnecessary for retroversion uncomplicated by descent of the uterus, since it is less easy to perform. These, then, are the advantages which are claimed for the 'sling' operation. It now remains for us to see in what class of cases it is indicated.

For purpose of treatment, we may divide uncomplicated retroversion into the following heads with its associated retroflexion—

- 1 *Congenital*
- 2 *Acquired* which may further be considered as subdivisible in three further varieties—
 - (a) *Puerperal*,
 - (b) *Inflammatory*,
 - (c) *Mechanical* (*i.e.*, due to pelvic tumours, full bladder, etc.)

With the *congenital variety* we have little to do. It is often symptomless, and when there are symptoms the most prominent is dysmenorrhoea, which may be cured by other methods.

Should pregnancy occur, the displacement usually cures itself, and after involution remains permanently cured.

If after labour the displacement recurs, it is treated as a puerperal case.

The *puerperal form* of the acquired variety of retroversion comprises the great bulk of the cases with which the gynaecologist has to deal. It is very common for the lower uterine segment, which during pregnancy is so markedly softened, to fail to regain its tone, with the result that the fundus uteri drops backwards, and, as a later stage of the same affection, becomes increasingly bulky and oedematous, and exerts an increasing drag on the involuting utero-sacral ligaments, with consequent retroversion, the cervix finally coming to point forwards, and the bulky fundus sagging into the pouch of Douglas.

This condition is aggravated by the almost invariably associated constipation of women,—both as regards in creasing the pelvic congestion, and consequently the oedema of the fundus, and by actual mechanical pressure of the loaded pelvic colon upon the retroflexed fundus uteri.

This variety of case, if identified early, *i.e.*, within a month to six weeks of labour, can usually be treated without operation. Careful regulation of the bowels by such drugs as parafinum liquidum, as recommended by Arbuthnott Lane, combined with the insertion of an Albert Smith, or Smith Hodge Pessary, and the administration of such uterine tonics as Calcium lactate or Eigoit, will usually effect a permanent cure, the condition very rarely tending to recur.

Should, however, recurrence take place after a clear two months' trial of such a course of treatment, or should

the case be of such long standing as to have pronounced menstrual symptoms—menorrhagia or metrorrhagia,—or should the condition be associated with a prolapsed, tender, oedematous ovary,—operation on the lines I have described is indicated, and it is in these cases that perhaps the best immediate and permanent results are seen.

The instant relief of the persistent backache which is one of the most insistent and distressing symptoms of the complaint is very striking, and, after three or four days have elapsed after operation, the patient suddenly realises that the dragging pain in one or other (or both) of her groins, as the case may be, has ceased and she will often remark that she "has not felt so well for years."

In *Retroversion of Inflammatory Origin* it is the operation of election, except in those extreme cases following severe pelvic peritonitis, whether of tubal, appendicular, or more remote origin, where the whole uterus is bound down by dense adhesions, when better results are obtained by Gilliam's operation.

In cases where the adhesions are easily dealt with, and not too plentiful, the 'Sling' operation yields admirable results.

In *Mechanical Retroversion* we meet with the condition caused (a) by *Constipation*. In this class of case, if the history is a recent one, it is worth trying a pessary for two months combined with rigid regulation of the bowels, and uterine tonics such as Calcium lactate or Ergot.

Should the condition recur on removing the pessary, after two months, then operation is indicated, and the results in this type of case are excellent.

(b) A *Bladder* chronically overdistended may cause retroversion, but such is usually slight in amount, and disappears after treatment of the cause. Should it persist, however, and give rise to symptoms, it is best corrected by operation.

(c) Any mechanical cause that from its very nature requires operative interference, such as pelvic or abdominal tumours, requires, of course, supplementary correction of the displacement at the same time, thus guarding against any future return of the mischief.

Summarising then, it is claimed for the 'Sling' operation that, briefly, it is indicated in all cases of persistent retroversion and retroflexion, with the exception of those cases which are combined with any degree of prolapso, or those in which the adhesions causing the retroversion are so dense and extensive that a safer and more permanent anchorage is deemed advisable for the uterus after freeing it from its imprisonment.

Having endeavoured to indicate the class of case that this operation claims to benefit, and to rescue efficaciously and permanently from the manifold discomforts and drawbacks of a "pessary life," I now turn to the records of cases so far performed by Dr Blane Bell, with a brief resume of their symptoms, and, wherever these have been attainable, their after histories up to the date of writing. Many of these patients have been under my own personal care, and I am able to speak from my own knowledge of the improvement they have experienced. For easy reference, I have summarised in a table the clinical histories and results of the following cases. Taken details of any particular case can be seen on referring to the histories in narrative form.

Case 1—Mrs E. McG., et 21. Was admitted to hospital on 8th February 1907 for "Pain in the back and stomach, especially at the periods."

Her menses were normal in frequency and amount, but she had severe dysmenorrhœa, and leucorrhœa between periods. Seven months before admission patient had been given a ring pessary, without relief, but since wearing it her menses had come on at 3 weekly intervals instead of the usual 4.

Per vaginam.—Uterus retroverted, retroflexed, and mobile. Right ovary prolapsed.

On 11th February a 'Sling' operation was combined with right salpingectomy for hydrosalpinx.

On 22nd February omentum was found herniated through sac with vomiting and signs of obstruction. This was treated by freeing the omentum and entero anastomosis, and recovery was complete. Patient left without symptoms on 12th April 1907 for a convalescent home.

This case reported herself quite well in July 1913, and examination revealed that the uterus was in excellent position.

Case 2—Mrs. E. T., et 44. Was admitted 27th August 1907 for "pain in the right side, worse after exercise."

Eight years previously after the birth of her last child patient had parametritis, which incapacitated her permanently from work. The pain started at the time and persisted in spite of two operations performed at another hospital, the nature of which she did not know. She had chronic bronchitis and emphysema.

Per vaginam.—Cervix lacerated and pointing forwards. Uterus fixed in an indefinite mass and lying backwards. On 18th September after treatment of bronchitis by medicine the abdomen was opened, and the uterus, right tube, ovary and vermiform appendix were found to be all bound together by adhesions. The appendix, tube and ovary were removed, and a 'sling' operation performed.

Recovery was interrupted by an attack of bronchopneumonia following the anaesthetic, which, however, yielded to treatment.

On 14th October patient left for a convalescent home, where her recovery was completed. All symptoms were completely relieved.

Case 3—Mrs. C S., et 35. Was admitted on 6th August, 1907, for "haemorrhage per vaginam and pain in bottom of the back." She had seven children, the last born one year previously—six months previous to admission patient had a fall and a week afterwards had a severe hemorrhage per vaginam and at intervals subsequently had 3 or 4 more severe floodings.

Per vaginam.—Uterus inclined backwards. Small cystic rounded lump felt behind uterus which, under an anaesthetic, was proved to be the left ovary.

On 12th August a 'sling' operation was performed, combined with left oophorectomy, the left ovary being cystic.

Patient was discharged cured on September 2nd, 1907. A good example of the effect of trauma upon a uterus, slabby from much child-bearing.

Case 4—Mrs A G., et 35. Was admitted on 9th November 1907, for "pain in the side" and sterility.

Patient had been married 18 months, and three months previous to admission had a dull aching pain in the left side and iliac fossa. Resting relieved the pain. Menses were unaffected.

Per vaginam.—Uterus retroverted and flexed. Left ovary prolapsed.

On 11th November a 'sling' operation was performed, and on 6th December patient left hospital relieved of her symptoms.

Case 5—Mrs M. P., et 48. Was admitted to hospital on 10th August 1907, for being "continuously unwell."

Her menses had been regular till her marriage 12 years before admission, since then they had been irregular. There had been almost continuous bleeding since a miscarriage, which took place five years before her admission. Six weeks before entering hospital a pessary had been inserted, the bleeding being less afterwards. She described herself as having bilious attacks at her periods, and incontinence of urine since the pessary was inserted.

Per abdomen.—Tenderness in epigastrium and both iliac fossæ.

Per vaginam.—Cervix forwards, uterus backwards, fixed and tender, some thickening between the uterus and rectum. On 12th August a sling operation was performed, the uterus on opening the abdomen being found to be movable and not fixed.

On 30th August patient was discharged

On 14th September 1908, this patient was re-admitted, having had pain since she left hospital a year previously. The bleeding had been cured, in fact, she had menstruated every six weeks since her discharge. Three months after her discharge she had had an attack of peritonitis, since when the pain had been aggravated.

On examination the uterus was found to be backwards in position and tender.

On 16th September the abdomen was opened, the uterus was found fixed backward in adhesions, which were freed and Gilliam's operation was performed. On 7th October patient was discharged, her symptoms being relieved.

On application for particulars of the patient's progress, I was informed that she had unfortunately died from cerebral haemorrhage in December 1911. Her symptoms, however, had remained relieved after the second operation. This case is one of the earliest in which the 'sling' operation was performed, and here as in contemporary cases, the round ligaments were stitched to the back of the uterus at the level of the internal os instead of to the back of the fundus. It is this case, which showed it to be possible for the fundus to sag back over the round ligaments and pull back the uterus with it, that suggested the now invariable practice of stitching the loops of round ligaments high up to the back of the fundus.

The above is the only case of this complication up to date, but it served a good purpose in demonstrating an improvement in technique.

Case 6—Miss M T, age 20. Was admitted on 27th August 1907 for "pain in the stomach".

For some months this pain had been persistent, and aggravated by menstruation, which was more profuse than normal. There was hysterical aphonia for three weeks previous to admission which disappeared after operation.

Per vaginam—Uterus backwards, with an indefinite swelling behind and to the right of the fundus. On 29th August the abdomen was opened, and a cystic right ovary removed. The retroverted and flexed uterus was slung forwards. Recovery was marked by post anaesthetic pneumonia, but was eventually complete and patient was discharged cured on 29th September 1907. Patient recently reported that she had become pregnant after leaving hospital and that the labour was notably easy.

Case 7—Miss I, age 36. Was operated on 2nd February 1908. Her symptoms being menorrhagia and abdominal pain from appendicectomy which had been performed in 1906.

Per vaginam—The uterus was found to be retroverted and fixed. At the operation adhesions were separated, the uterus being freed, and a 'sling' operation performed. Recovery was uninterrupted and at the date of writing this patient is very well, and may be counted as cured.

Case 8—Mrs. E J was admitted on 6th March 1908, for "pain in the right side".

For two years she had had pain in the right side unaffected by menstruation. She had menorrhagia for the same length of time associated with the passage of clots. Her last child had been born two years and three months. Leucorrhoea between periods.

Per vaginam—Uterus tender and felt completely in posterior fornix.

On 9th March a 'sling' operation was performed, and on 6th April the patient left hospital cured.

Case 9—Mrs M J, age 38. Was admitted to hospital on 22nd August 1908, suffering from "pain in the right side".

She had seven children, the last two years previously, since when her symptoms had been menorrhagia, with leucorrhoea intervening, and constipation. The right sided pain she dated from her confinement, it was continuous and aggravated by menstruation.

On 24th August a 'sling' operation was performed, and on 16th September 1908 patient was discharged cured.

Case 10—Miss A B, age 24. Was admitted on 12th September 1908 for "pain in left groin".

This pain had lasted for two years, gradually growing worse, and aggravated by menstruation. There was marked leucorrhoea.

Per vaginam—Uterus small, mobile and retroverted.

On 14th September a 'sling' operation was performed, and on 8th October patient left hospital without symptoms.

Case 11—Miss N T, age 31. Was admitted for "continuous pain in the side," on 12th September 1908.

For two years she had suffered from continuous pain in the left iliac fossa and back, which was worse on menstruation. There was profuse leucorrhoea and micturition was painful.

Per abdomen—Tenderness in the left iliac fossa.

Per vaginam—Uterus retroverted and immobile. On 14th September a 'sling' operation was performed, the uterus not being bound down, and on 7th October 1908, patient left hospital without symptoms.

Case 12—Miss M M, age 23, domestic servant, was admitted to hospital on 10th April 1909, for "pain in the stomach and incontinence of urine".

Menstruation was peculiar in that her cycle was three weekly and her loss only for one day. It was associated with pain of the spasmodic type.

Seven months previously patient had a sudden sharp pain in her abdomen and was operated on as an emergency in a Dublin hospital. She remained in hospital three weeks and since her discharge had had incontinence of urine, associated with headaches, chills, and shivering fits. There was marked constipation.

Per abdomen—A medium scar, markedly tender. Right kidney palpable, sigmoid flexure, hard and contracted.

Per vaginam—Uterus retroverted.

On 19th April 1909 the abdomen was opened, and the sigmoid which was bound down by adhesions was freed, and the uterus slung forwards.

On 10th May patient left hospital, without symptoms. This patient is now an attending out patient. For three years she was free from any symptoms, but lately has had frequency of micturition with pain during the act. The uterus and adnexa are in excellent position and her difficulty in micturition is much improved by medical treatment. No renal abnormality is seen and the trouble is ascribed to cystitis.

Case 13—Miss M G, age 22. Was admitted to hospital on 17th April 1909. This case is unusual in that menstruation did not start till 20, and that when admitted patient menstruated only every 6–8 weeks, the flow lasting for 1–3 days. Menstruation was characterised by severe pain for seven days before the onset of the period, and pain was so severe during the flow that she was compelled to lie up.

She had worn a Hodge Pessary for two years without relief—in fact, with positive discomfort.

For two years she had had constant pain in the hypogastrium—much aggravated by menstruation.

Per abdomen—Negative.

Per vaginam.—Retroversion with double ovarian prolapse.

On 19th April the 'sling' operation was performed, and on 10th May patient was discharged completely relieved of all pain.

On 23rd July 1913 this patient reported that her symptoms were relieved by the operation and that menstruation became normal. She had since married and had miscarried when pregnant four months.

From her history it was deemed advisable to take a sample of blood for Wassermann's test, it being thought that the miscarriage was probably attributable to specific disease.

On examination the uterus was normal in position, but the right ovary was prolapsed.

This again is a case in which shortening of the ovarian ligament had not been deemed necessary, and in the case of the left ovary has been proved unnecessary.

13th August 1913—Rt ovarian ligament shortened,
3rd September 1913—Discharged cured.

Case 14—Mrs I P, at 30 Was admitted to hospital on 29th July 1911 for "walked dyspareunia and pain in abdomen and left side."

Her menses were irregular, and always associated with severe pre menstrual and menstrual pain. There was profuse offensive leucorrhœa.

For two years patient had noticed the pain in abdomen and left side, dating since the last confinement, but it had recently become much more severe. Micturition was at times painful and the bowels were very constipated.

Per abdomen.—Some tenderness in left iliac fossa

Per vaginam.—Uterus backwards and left ovary prolapsed.

On 31st July a 'sling' operation was performed and on 22nd August patient left hospital without symptoms.

She reports a normal and very easy labour in 1912 and the dyspareunia is cured.

Case 15—Mrs A. F., at 31 Was admitted to the hospital on 2nd August 1911, suffering from "pains in stomach." Her menstrual periods were marked by severe pain on the first day, but lasted only four days, loss was normal, and between the periods there was a yellow, profuse and offensive vaginal discharge.

For two years patient had suffered from a "nagging" pain in the hypogastrium which was worse on standing. There was persistent and intractable constipation, and patient said she was becoming thinner.

Per abdomen.—There was slight tenderness in the left iliac fossa.

Per vaginam.—The uterus was backward, freely movable, the vagina was wide, and the right ovary was prolapsed.

On 5th August 1911 a 'sling' operation was performed, the cervix dilated and the uterine cavity curetted.

Recovery was uninterrupted and patient left hospital cured on 29th August 1911.

I saw this patient on 8th July 1913, when she said she had been free from symptoms of any kind till 23 months previously when she had begun to suffer from pain in the left iliac fossa her last period had been three days early, and slightly more profuse. I examined her and found the uterus in excellent position, and freely movable and nothing abnormal in the pelvis except a distended rectum full of scybala, and a loaded pelvic colon distinctly palpable per vaginam. Accordingly patient was smartly purged with calomel, was put on paraffin, and a week afterwards reported that the pain was gone.

This case is interesting as illustrating how much discomfort constipation can give rise to in an otherwise healthy pelvis.

Case 16—Mrs S, at 30 Was operated upon on 28th February 1912, her symptoms being dysmenorrhœa and sacralgia. She had no family.

Per vaginam.—The uterus was found to be retroverted and both ovaries prolapsed.

A 'sling' operation was performed and the ovarian ligaments shortened, with the result that she is relieved of all symptoms.

Patient reports the occurrence of a normal pregnancy and easy labour in June 1913.

Case 17—Mrs H B, at 33 Was admitted to hospital on 24th August 1912 for "floodings and 'turnings' of the womb." Her menses had been regular and gave her no pain till January 1912, since when she had been passing clots with leucorrhœa between periods. In January 1912 menorrhagia began and when she was about patient lost almost continuously.

Per vaginam.—Uterus markedly retroverted and retroflexed.

On 26th August the patient was operated upon. A 'sling' operation was performed together with double

salpingostomy, the tubes being sealed. Patient was discharged without symptoms on 17th September 1912.

Case 18—Mrs E G, at 48 Was admitted to the hospital on 31st September 1912, suffering from "pain in the right side and leg and vaginal discharge."

Her periods had always been characterised by severe pre menstrual and menstrual pain, and there had been irregularity and menorrhagia for two years previous to admission, and for the same period she had suffered from severe dragging pain in the right side which radiated down the right leg.

Abdominal examination was negative.

Per vaginam.—The uterus was found to be enlarged and retroverted, the cervix being hard with slight discharge from it.

On 5th September 1912, Dr Blair Bell opened the abdomen and performed the 'sling' operation. Patient experienced immediate relief from the pain described in her history, but unfortunately on the 16th day after operation suddenly developed right hemiplegia, the right arm and leg being paralysed as well as the right side of the face, speech was much affected. Patient was accordingly transferred to a medical ward. I saw this patient on 15th July 1913, 10 months after operation. She then informed me that she had had no pain since and that she had five normal periods after the operation. Menstruation then ceased, with the exception of a sixth "show." The loss was markedly less the last two periods, and she attributed her amenorrhœa to the menopause. Her speech was still thick and laboured.

Case 19—Mrs J R, at 25 Was admitted to hospital on 17th September 1912 for "pain down the left side and leucorrhœa." Her normal menstruation was four days out of every 28, but recently there had been menstrual pain.

For eight years patient had had pain in the left side, more recently it passed to the right side. Pain was constant in character, worse while menstruating, and relieved by fomentations.

Abdominal examination negative.

Per vaginam.—Cervix uteri was lacerated, the body of the uterus retroverted.

On 19th September a 'sling' operation was performed, and on October 10th patient was discharged cured.

On 23rd July 1913 this patient reported herself.

On examination the uterus was found to be normal in position, but there was a vaginal discharge with a history suggestive of gonorrhœa. A swab was taken from the urethra, but at the date of writing no report had been received from the bacteriologist.

Case 20—Mrs K J, at 29 Was admitted to hospital on 17th September 1912 suffering from "Pain in the bottom of the back and haemorrhage."

For two years patient had had insistent pain in the bottom of her back which she dated from her confinement, her baby being 2 years old. For the last few months her menstrual cycle, instead of the normal 3-4 days out 28, had been increasing in length and frequency, until, at the time of admission, she was losing 4-5 days out of every 21, with the passage of clots.

Abdominal palpation did not reveal anything abnormal.

Per vaginam.—Uterus was found to be retroverted and retroflexed, the bulky, tender fundus lying in the pouch of Douglas.

On 19th September the 'sling' operation was performed and on 11th October patient left the hospital cured. On 29th July 1913 this patient was seen again. She had had no return of pain or menorrhagia and was pregnant, the period of gestation being 20 weeks, and her history was in every respect that of a normal pregnancy and was confirmed by examination.

This case is an excellent example of the puerperal type of retroversion materially benefited by operation, and since, at 5 months' pregnancy no abnormality was detectable, there is every indication of a normal labour and puerperium to follow.

Case 21—Miss W., at 23. Was operated upon on 16th December 1912 for severe dysmenorrhœa.

Per vaginam—Retroversion and ovarian prolapse

A 'sling' operation was performed, and the cervix dilated, with the result that the patient is cured of her pain

Case 22—Mrs E G M, at 30. Was admitted to hospital on 26th November 1912 for "Bearing down pain"

She had been cured five years previously and had had a Batholin's abscess opened a few months previous to admission

Her history was one of nine years' pain in the hypogastrum and right iliac region dating from the birth of her child. A pessary had been inserted but caused such pain, discomfort, and leucorrhœa that she discarded it. She stated that the instrument had also caused ulceration of the vagina. She was free from pain when in bed, but stated that when about she could "feel the womb turn over" on any exertion. There were no menstrual symptoms

Per vaginam—An extreme degree of retroversion was found, the cervix pointing directly forwards and the fundus bulging and flattening the posterior fornix.

The 'sling' operation was performed on 28th November and patient left the hospital on 31st December relieved of her symptoms

On 29th July 1913 patient was re-admitted for dyspareunia. The uterus was normal in position, but there was left ovarian prolapse, which on 31st July was treated by shortening of the ovarian ligament. At the first operation the position of the ovary seemed satisfactory after the uterus had been slung forwards, and it was accordingly left alone, although the ovary was somewhat bulky and oedematous. Events prove that it would perhaps have been better had the ligament been shortened at the time, but as I have explained such a step would have been a 'shot in the dark,' there being no indication for such interference. The line of treatment now adopted is—when in doubt shorten the ligaments

Case 23—Mrs S N S, at 28. Was admitted to hospital on 28th December 1912, suffering from "Aching pain in the right side" and for associated dysmenorrhœa and sterility. Eight years previously patient was operated upon per vaginam for "Pain in the back." Five years after this she had her appendix removed, and 3 months before admission for a 'lump' in the back (? lipoma). Since her operation for appendicitis she had suffered from right sided pain, worse when menstruating, and especially severe for the 6 months previous to admission, during which period menstruation had been irregular and scanty and dyspareunia a marked feature.

Recently she had suffered from pain on micturition and incontinence of urine, for the last two weeks before admission any spasmodic act, e.g., coughing, would cause passage of urine.

Per vaginam—Uterus was retroverted and the right ovary prolapsed. Abdominal palpation was negative.

On 30th December the 'sling' operation was performed—the uterus was found to be fixed backwards by adhesions which were freed.

On 25th January 1913 after an uninterrupted convalescence patient left the hospital.

On 15th July 1913 I saw this patient again. Until one month before the interview she had been free from all pain of any description. The last period, however, had been characterised by a milder edition of her previous right sided pain, which had persisted with modified severity since. Another period was nearly due when she was seen. There had been no dyspareunia since discharge from hospital.

On examination I found the uterus was in excellent position, but that the right ovary had a tendency to prolapse. I accordingly advised re-admission for shortening of the ovarian ligament, a measure which had not been deemed necessary at the previous operation.

Case 24—Mrs A, at 35. Was operated upon on 1st April 1913, her symptoms being "pain in the hypo-

gastrium, indigestion, pain in the back and bearing down sensations." She had had three children.

Examination showed her to be suffering from puerperal retroversion and chronic appendicitis.

The abdomen was opened, the appendix removed and the uterus slung forwards as described.

There has been no return of symptoms.

Case 25—Mrs M W, at 38. Was admitted to hospital on 8th April 1913 for "excessive menstrual loss."

Her periods had been regular and normal till Christmas 1912, but for many months she had had pain at the bottom of the back, which became gradually worse. At the end of March 1913 she had a severe flooding at the time of a period. There was extreme constipation.

Per abdomen—Nil detected.

Per vaginam—Uterus big and bulky. Retroversion and retroflexion, fundus bulging the posterior fornix. On 10th April patient was operated upon, and on 4th May discharged after an uninterrupted recovery. On 20th July 1913, on being applied to for news of her progress, her medical adviser wrote that she was doing *very well* after the operation, that the pain was gone and menstruation normal.

Case 26.—Mrs B, at 35. Had had one child and two recent abortions and was operated upon on 9th April 1913. Her symptoms being menorrhœa, dyspareunia, dysmenorrhœa and sacralgia.

Examination.—Reveal the condition to be one of puerperal retroversion, associated with a mucous polyp and endometritis (which the microscope showed to be adenomatous). The uterus was slung forwards and the uterine cavity curetted.

At the present time she has complete relief from all her symptoms.

Case 27.—Mrs. M T S, at 38. Was admitted to hospital on 11th April 1913, for "vaginal discharge."

Her menses were regular, but she had been badly "torn after her last labour five years ago. One month previous to admission patient had a 'flooding' at a menstrual period, and just before admission another, and more pronounced haemorrhage. Her medical adviser suspected carcinoma, and referred her to the hospital for operation. For two years patient had had an offensive vaginal discharge between periods.

Per abdomen—Nil detected.

Per vaginam—Uterus retroverted and retroflexed. Double laceration of the cervix, but no evidence of growth.

On 15th April a 'sling' operation was performed, supplemented by curetting and amputation of the cervix. Patient was discharged on 8th May free from all symptoms.

On 20th July she wrote from home stating that she was "quite well and hearty," and that she had no pain or discharge, and that her menses had been normal in amount and frequency since she left hospital.

Case 28—Miss A, at 35. Was operated upon for dysmenorrhœa on 5th May 1913. Examination revealed that the mischief was due to retroversion and to chronic appendicitis. A pessary had given no relief. The 'sling' operation was performed, and the appendix removed.

When patient left the home the position of the uterus was excellent, as I ascertained by examination, her symptoms were relieved, and so far, have remained so.

Case 29.—Mrs G., at 39. Was operated upon on 21st May 1913 for irregular menstruation, pain in the back, and dyspareunia. She had had no family but had had one abortion.

Per vaginam—Uterus was retroverted and both ovaries prolapsed.

At the operation the uterus was slung up, and both ovarian ligaments shortened.

Relief of symptoms was absolute and has so remained.

These, then, are the cases illustrating the operation I have described. In all except case 5 relief has been

immediate and complete, and, with the exception of a few cases in which the shortening of the ovarian ligaments, after discussion, was not performed, with the resultant necessity of a subsequent operation to remedy recurring ovarian prolapse permanent. These cases have been useful in producing better results in later cases.

In many cases the marked and immediate relief stands out in gratifying contrast to the discomfort and inadequacy of previously tried pessaries.

In one case a patient is five months pregnant with every sign of a normal gestation and an uneventful labour to follow, and recently, I am informed, one of the cases operated upon in private has been delivered of a full time child after a notably easy labour.

I hope at a future time to bring more evidence as to the favourable results on future labours of this operation.

Since the original reading of this paper four subsequent cases (Nos 30-33) have been collected and a few additional particulars as to subsequent pregnancies have been acquired. Case 14, on describing her subsequent labour, was most insistent on the "good time" she had experienced, all her other labours having been "bad times," when examined in July 1913, a year after her confinement, the pelvic condition was excellent, and the general result was most gratifying.

I have to acknowledge with much gratitude the valuable and time saving help of Lieutenant T R D Webb, M.R.S., in reducing the histories of the above cases to tabular form, thus rendering easy an otherwise laborious process.

A Mirror of Hospital Practice.

THE NATURE OF JAIL DYSENTERY

BY L BODLEY SCOTT, M.D., D.P.H.,
MAJOR, I.M.S.,
Civil Surgeon, Shillong

THE following figures may be of some interest and value towards settling the question whether jail dysentery is mainly of the amoebic or bacillary type. They were collected in Sylhet jail which, like many of the other jails of Bengal and Assam regularly has a high admission rate for dysentery. It is a large district jail with a population of between 600 and 700. Facilities for bacteriological tests not being available it was decided to apply the test of treatment in order to settle whether the dysentery of this jail is amoebic or bacillary in nature.

In April 1913 therefore a "dysentery register" was opened and all prisoners admitted to hospital for this disease were entered in the book as they came. Without selection, alternate cases on the list were treated with hypodermic injections of emetine, $\frac{1}{2}$ gr daily for two to five days, and alternate cases with the older methods. About half the latter received ipecacuanha in doses of gr $\frac{1}{2}$ to gr xl per diem for three to nine days and the other half were treated with sodium or magnesium sulphate, one drachm every three hours continued in diminishing doses, while a few received tinct *Ivora coeci* or extract *Holothrena liquidum*, which drugs had been sent for trial in small quantities by the Indigenous

Drugs Committee. In the register were recorded —

- (1) The treatment in each case
- (2) The number of days remaining in hospital
- (3) The number of days passing mucus.
- (4) The number of days passing blood
- (5) The number of motions on each day of illness.

The experiment was kept up for ten months during which 254 cases of dysentery were admitted. Eight of these died, giving a case mortality of 3.15 per cent. The averages in the tables below were calculated on a total of 239 cases, certain cases which received mixed treatment being omitted and also, in order to decrease the "probable error," a few which deviated excessively from the means as regards number of days under treatment, stools, &c.

It will be seen from the tables that there was no very striking difference between the results of the various methods of treatment. There was however a slight balance in favour of the saline treatment. It gave somewhat better results as regards length of stay in hospital, progressive diminution in the number of stools and percentage of cases relapsing than any of the other methods.

The main point is that emetine gave no better results than the other forms of treatment, and from this it may be concluded that the type of dysentery under observation was not the amoebic.

TABLE I.

	Emetine	Ipecacuanha	Saline	Tinct <i>Ivora coeci</i>	Extract <i>Holothrena liquidum</i>
Number of cases treated by hospital	105	55	63	8	8
Average number of days in hospital	7.8	7.0	6.8	7.4	7.0
Average number of days passing mucus	2.5	2.2	2.8	2.0	1.6
Average number of days passing blood	3.5	2.9	2.5	3.6	3.0
Percentage of cases lapsing after	16.0	16.4	12.7	37.0	50.0

Deaths after emetine 4, after emetine plus ipecac, 1, after emetine plus saline 1, after ipecac, 1, after saline 1

TABLE II

	AVERAGE NUMBER OF STOOLS ON EACH DAY OF DISEASE IN PATIENTS TREATED BY		
	Emetine	Ipecacuanha	Saline
One day under observation	?	?	?
1st day admitted	12.7	12.7	10.3
2nd "	9.7	9.3	7.3
3rd "	6.4	6.1	4.6
4th "	4.2	3.4	3.3
5th "	2.7	2.7	2.8
6th "	2.3	2.7	2.3
7th "	1.9	1.9	2.2

Sub-Assistant Surgeon Han Chaian Kaimakai expended considerable care and labour in recording the details of the cases

NOTES ON THE TREATMENT OF CHOLERA BY THE EXHIBITION OF CHLORHYDRATE OF EMETINE IN HYPODERMIC INJECTIONS

BY DR RENAULT,

Medecin Major of the First class, Director of the Sanitary Service of French India, formerly Professor in the "Ecole d'Application du Service de Santé des Troupes coloniales" at Marseilles

AN epidemic of cholera of a very virulent type has just raged in the territory of Pondicherry, committing terrible havoc, as it has claimed no less than 1,067 victims. It broke out in the beginning of October and subsided in the first week of April.

1,226 cases came under the observation of the medical staff, specially organised to combat the scourge and detailed for duty at different points of the infected area, but this figure cannot be regarded as exact, as a considerable number of cases must, it is to be feared, have been withheld from the cognizance of the officers on cholera duty, owing to the superstitious dread of the ignorant and afflicted population. But the death-toll certainly approximates to the truth.

The mortality was particularly severe in the month of December and January, at which epoch in the course of the pestilence the bill of health was appallingly bad.

It was at this stage which appeared to me most opportune for experimentation, that I was led to put to the test the treatment by means of chlorhydrate of emetine.

Ever since I became aware of the discovery of Vedder in the Philippines and of Rogois in India, I have been conducting experiments myself with the remedy in cases of dysentery. The valuable experience thus acquired of its therapeutic action on the organism and its results determined me to make trial of it in cases of cholera. I employed it in hypodermic injections of 1 in 100 strength in the following doses—

4 centigrammes per diem in patients of more than 25 years of age

3 centigrammes per diem in patients of the ages between 15 and 25

2 centigrammes per diem in patients of the ages between 8 and 15.

1 centigramme per diem in patients of the ages between 1 and 8.

These injections were repeated and the doses were themselves enhanced according to the necessities of the individual case.

60 patients were subjected to this treatment, 44 were discharged cured, while 16 succumbed,

thus yielding the not inconsiderable result of 73 per cent of cures.

As the notes published to date of researchers the world over about the application of emetine tend to show, this remedy is very potent in its action in dysentery, effecting not only a diminution of amoebæ in the motions, but also the disappearance of the colic and the return to normal of the number and character of the stools.

Starting with this principle that the profuse diarrhoea attendant on cholera entailing, as it does, a rapid drain of the blood-serum, speedily prostrates the powers of the patient and leaves him neither time nor strength to react against the virus, I have been puzzling myself to ascertain if we have not in emetine the desideratum, the weapon in our therapeutic armoury wherewith to arrest the intestinal flux and simultaneously restore the action of the liver.

I submit that my theory was entirely borne out by facts, and I describe below the results observed in the great majority of cases by myself, by the subordinate staff and even by the infirmarians.

Very soon after the injection, the number of motions diminish, the bile reappears in the stools which by degrees return to their normal consistency, sickness subsides, the action of the kidneys, which is sometimes suppressed, is restored, and little by little the patient rallies, and a complete cure is effected in a very short time.

It is to be noted that the remedy was applied not only by myself and the health officer under me, but also by the infirmarians. These last in their misdirected zeal—which naively expected of the drug better results than it could possibly yield, before its success was demonstrated exhibited it in desperate cases, contrary to my clearly expressed directions on the subject. This circumstance has, I believe, to some extent vitiated the results which ought to have been better than they turned out to be.

During the extreme stage of the disease, the stage characterised by marked loss of animal heat and anuria, when the vomiting and the motions have ceased, the drug has no effect whatever, the intoxication of the system being complete. But then we know that all the other resources of medical science are equally unavailing. On the contrary, in the case of the patients still exhibiting the symptoms of vomiting and diarrhoea, even if anuria has supervened, the administration of the drug has truly marvellous effects.

Without a doubt there are other modes of treatment which have produced as satisfactory results, notably the intravenous injection of either isotonic or hypertonic serum. But this calls for somewhat elaborate apparatus and assiduous supervision on the part of the medical

staff. In very many cases, the injections have to be repeated several times within 24 hours, and it is desirable that the practitioner be present at the bedside of the patient. In times of epidemic, then, when seizures are numerous and spread broadcast over a vast area, this mode of treatment must be pronounced to be well-nigh impracticable. Moreover, it can be averred as a general fact of all indigenous races, and the people of India are no exception to the rule, that they look upon these intravenous injections with peculiar disfavour, and stubbornly refuse to submit to them. They are much more easily persuaded to undergo a hypodermic injection. From this point of view, therefore, the treatment by means of emetine is worthy of serious consideration by the faculty, as its administration is more easy and as it meets with less antagonism from the prejudices and susceptibilities of natives.

While injections of emetine are decided upon and resorted to, other auxiliary modes of treatment ought not to be neglected, e.g. draughts to stop the diarrhoea, and various injections of camphorated oil, of caffeine, and artificial serum. Recourse should likewise be had to external therapeutics, to injection with warm lotions and other measures to mitigate the extreme coldness and numbness of the body.

A CASE OF PULMONARY TUBERCULOSIS TREATED WITH TUBERCULIN

BY G. C. CHATTERJEE,

Asst Bacteriologist, Medical College, Calcutta.

In my last paper on "Therapeutic use of tuberculin in tuberculosis" published in November 1912 number of this journal, I could only give a short résumé of my cases in tabular form. A detailed description showing the method of treatment with the dosage could not be given, as it would have made the paper too long. Since then I have, however, received several communications from practitioners from different parts of India, asking me to give in detail the dosage and method of employment of tuberculin. The report of the following case which is interesting for more reasons than one, will, I believe, give the desired information for a type of cases which are very common.

The patient, an adult, aged 30 years, enjoying good health, began to get evening rise of temperature with cough from middle of February 1912. History revealed that he was undergoing a course of mercurial treatment for syphilis which he contracted a few months previous to this disease. I saw the patient for the first time in June of that year. His condition was at that time as follows. The patient, though of strong build, shewed signs of marked emaciation. He was getting an evening

rise of tempeiture of 100° to 101°, morning tempeiture being normal. There was troublesome cough. Expectoration nummulai, microscopical examination showed numerous tubercle bacilli.

Examination of chest revealed over whole of the region over the left scapula,—dull on percussion, increase in vocal resonance and fine crepitations, audible all over the region. A course of tuberculin treatment was decided upon and the first dose was given on 9th June 1912, no drug except Tr Fern Perchloride and a dose of Salvarsan was given to the patient during the whole course of treatment.

The injections of tuberculin were given every week. Temperature was carefully recorded twice daily, weight was taken every week. The patient was allowed liberal diet and was told to remain as much outdoors as possible. On 15th September he got a high fever without any apparent cause. As the glands in the groin became swollen with the fever and as he gave a history of similar attack of fever previous to this, his blood was examined at night when numerous embryos of filaria nocturna were found. A full dose (6 grammes) of Salvarsan was given on 13th October for its supposed action on filariasis and also for cure of the syphilitic complaint. Though up to now he has not had a relapse of the fever, examination of the blood even so late as January of this year showed numerous embryos of filaria. Sputum was examined five times for tubercule bacilli. In the first two times the bacilli was found in large numbers. On the 3rd occasion the bacilli were very scarce. On the last two occasions no tubercle bacilli could be found. A note was kept up of the result of examination of his chest which was periodically done during the course of the treatment. They were as follows—

On 9th June 1912, right apex and suprascapular regions and over the scapula, dry crepitant rales audible.

On 23rd June 1912, no abnormal sound in the left apex over the suprascapular region—crepitations as before.

On 26th August, no crepitations audible, but wheezing rales over the left scapular region.

On 28th October, left apex—harsh creaking sounds over the left scapular region—wheezing and creaking sounds audible.

On 18th November, cogwheel respiration over the left supraspinous region—no adventitious sound audible.

On 9th December in the interscapular region—fine crepitations audible.

On 20th January, no crepitation audible anywhere in the left interscapular region, a sort of wheezing sound audible.

The present condition of the patient is as follows—

The patient looks as healthy as possible. He is free from fever and cough. His appetite is as

good as possible. Examination of his lungs showed no loss of resonance over the left scapular region. On deep breathing, a sort of wheezing sound is audible, otherwise no abnormality noticeable.

The accompanying chart shows the course of fever, dosage of tuberculin employed and the weight.

In conclusion, I like to remark that this case of tuberculosis, though suffering under additional disadvantages of filariasis and syphilis, showed an uninterrupted progress with tuberculin, gaining a total increase of 47 lbs within a course of six months, with disappearance of tubercle bacilli from the sputum, and also the fever and cough. He remained in the same climatic condition as he was previous to the commencement of the course of treatment.

It is, of course, too early to judge whether he is going to get a relapse or not. But judging from other similar cases, in some of which five years have elapsed without a relapse, it is possible to predict a bright prospect for the patient. Another course of tuberculin may be required for slight failing health, and the patient has been warned to keep a strict watch over his health.

TWO CASES OF TRANSPOSITION OF THE VISCERA

BY BAMANJI PESTANJI DARUVALA,
L.C.P & S (Bombay)

Case I—A male, aged about 25 years, was admitted to Civil Hospital, Ahmedabad, on 8th December 1913, for a tumour on the right side of the abdomen.

The tumour presented the appearance of an enlarged spleen and was marked by a notch with its concavity pointing towards the left side of the abdomen. This peculiar appearance of the tumour on the right side aroused the suspicion of the presence of the spleen on the right side, and on careful examination it was found to be true.

This discovery led to further search for the transposition of other viscera and the heart was found to be situated on the right and the liver on the left side of the abdomen. The greater curvature of the stomach was found to point to the right side, and I presume the arch of the aorta took an opposite turn, which, however, could not be ascertained in the absence of an 'X-Ray' apparatus.

The interesting point to be noted about this case was the considerable enlargement of the spleen due to chronic malaria. It was so much

enlarged that it had displaced the apex of the heart and extended four inches beyond the middle line and as many inches below the umbilicus. Had it not been for the enlargement of the spleen this case would have escaped detection. I am sending you his photograph, which, if convenient to you, might be inserted in the journal.



Case II—Also a male, aged about 25 years, sought admission to hospital for an ulcer on the leg. Here, the discovery of the transposition of the viscera was made, the patient's pulse being weak, by the examination of the heart and finding the absence of the sounds on the usual side. On careful examination the heart was found to be situated on the right and the liver on the left side. The greater curvature of the stomach was on the right side. In this case also, as in the first case, there was an enlargement of the spleen, but not to such an extent as in the former case. It would be interesting to note that these two cases came about the same time, so that these cases of transposition of the viscera must be more frequent than are usually thought to be and the enlargement of the spleen might lead to the discovery of such cases.

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Indian Medical Gazette.

JULY

"SWEATING THE SCIENTIST"

UNDER the able Editorship of Sir Ronald Ross the new quarterly *Science Progress** has succeeded in taking its place as the leading exponent of scientific work and thought

In recent issues notices have been inserted asking for information on the emoluments of scientific workers, and, though all the information available has not been collected sufficient evidence is at hand to prove the low scale of payment given throughout the British Empire for such work

The term "scientific worker" includes "all salaried workers" i.e. men of all grades, research students, assistants, professors, directors of laboratories, and other fully paid workers half time and whole time workers

The lowest scale of pay mentioned in the replies is £85 a year for half time work, junior posts are from £120 to £250, rarely £300 a year, and the highest pay reported amounts to £850 a month, for an appointment in Ceylon

In a few cases there are pensions, but very rarely any family pensions. Very few even of the highest appointments reach £1,000 a year. Pensions are contributed towards, and retirement is compulsory at 60 or 65. Progressive rates of pay are seldom provided for.

Junior appointments need not be considered, the holders are still apprentices, it is the senior posts which must be considered in drawing comparison between payment of scientific work and other lines of effort. On the whole (writes the Editor of *Science Progress*) "such a comparison leads to a very unfavourable conclusion. It is bad, compared even with the Church."

The highest appointments in science are far less paid than "the highest appointments in the Anglican Church, much less paid than the highest posts in the Army or Navy,"—"the scientific and academical" side of the medical profession are far less well paid than the clinical side, i.e. successful physicians and surgeons make much more money than the professors pure and simple, of the profession

The disparity is still greater in comparison with "business" or the law, or even such branches of Art, as the drama, singing and acting.

Good pay should be given for good work and should bear some proportion to the value of the kind of work done. An architect or a general is paid more than a bricklayer or a private because the work of the former is more important.

"SCIENCE IS NOW OUR PREMIER INDUSTRY"

The priest, the clinician and the lawyer do good service to a few, the soldier, sailor or even the politician good work to their country, but the scientific worker or discoverer does good to all the world and for all time. But they are the worse paid it would seem as if "scientific work is paid in the inverse ratio of its value."

It will be said that this is a mere matter of supply and demand. It is so, but the same principle governs sweated industries of all kinds.

This sweating is rendered possible by the fact that young graduates fired with enthusiasm for science, take up scholarships and research studentships, all goes well for a few years and then they wake up to find it is too late to go into more paying lines, and they have only before them a prospect of a poor competence and the conviction of having made a mistake.

We need not follow *Science Progress* in pointing out the "many small abuses attached to high intellectual work." The best paid posts do not fall to the best work done, popularity, private influence and "skill in the acts of time service" are the qualities which lead to good appointments. The face of advertising for vacant appointment when the post has been practically allotted is commented upon, the vile necessity of canvassing, the "recently started habit of giving our rare professorships to foreigners, because the institution likes to obtain a reputation for magnanimity," the indifference often shown by learned bodies in the matter of honours, the academic honours showered on popular idols, all these points are discussed in the article before us.

Again the allotments made by Parliament to scientific bodies are ridiculously small—nay Government even asks expert advice and expert aid for nothing. "The Society is honoured by the request and obtains the advice gratis from its members." Twenty millions are spent in the United Kingdom on low class education, but

what is done for the greatest of educators, science, art, drama, exploration, discovery, invention. There is no copyright or Patent Act for the man of science.

All this springs from the curious and stupid attitude of the public to all forms of intellectual effort politics, games, *panem et circenses*, and picture shows are the things which amuse the modern democracy. The endowment of research has often been talked of, but the Government of England has so far done very little.

CRAWFORD'S HISTORY OF THE I M S

In a previous issue we gave an account of the earlier chapters of this fascinating history.

The second volume begins with a chapter on Medical Administration and deals with that question from the first appointment of Thomas Anderson as Military Surgeon-General in Bengal in 1769, to the appointment of our present Director-General Sir Paidey Lukis, K.C.S.I. The various changes in the Medical Boards and the still more various changes in the title of the Heads of the Medical Departments are given in detail for all three Presidencies.

The 24th chapter, on the Sea Services, is of much interest and many of our famous men served on board an "Indiaman" e.g., Neil Arnott who died, after a distinguished career in Europe and Asia in 1874, Jame Spence, who on his return home, became Surgeon-in-ordinary to the Queen in 1868, and Francis Buchanan-Hamilton, *cum nomen in Indian History*, made four voyages as a surgeon in an Indiaman and many of us remember at least the name of William Charles Maclean, for 25 years Professor of Military Medicine at Fort Pitt, and at Netley Joseph Hume, the radical politician and M.P., began as a surgeon on an Indiaman and after 9 years' service in India retired with a fortune of £40,000 sterling. Alex Giant, the friend and physician of Dalhousie, also served two years on the Indiaman *Thames*. Incidentally Lt-Col Crawford gives an interesting account of piracy in the Eastern seas in those early days.

The chapter on contracts and trade is most interesting and the big fortunes made by many medical officers in trade might awake feelings of envy in these days of high prices and hard times.

The chapter on the minor medical services opens up a portion of the history of the service little known. The St Helena Medical Service, the West Coast Medical Service, the Princes of Wales Island Service, the China Medical Service are all long gone and forgotten.

Chapter 27 deals with the origin and rise of the "Uncovenanted" and subordinate medical services down to the present day, and points out the number of men who rose to the commissioned ranks, including the centenarian John Bowton who died (aged 100) in March 1899, John Keess who was Principal, Madras Medical College in 1884, and the energetic Colonel P. Helm.

The chapter on Surgeons as Political Officers is of special interest and contains the great Minute, dated 2nd January 1860, by Sir James Outram with its fine eulogy of the work of medical officers, which should be read by all.

This chapter also contains the famous letter from General Sir Neville Chamberlain to Dr Boyes Smith of Netley, in which he said that work done in dispensaries and on the frontier by regimental Medical officers "has been in political importance equivalent to the presence of some thousands of bayonets."

The next chapter deals with other extra professional work of the I.M.S. and gives details of the facts which the author has briefly recorded for us in the special number of this Gazette June 1912, "What the I.M.S. has done for India."

The chapter on War Services is naturally full of interest and many will read with interest that on Honours and Rewards. In 1850 medical officers became eligible for the Order of the Bath and in that year four I.M.S. officers received the C.B. Honorary appointments on the Queen's staff were granted in 1859, and our author gives accounts of the V.C.'s bestowed on the late Major H. F. Whitchurch, I.M.S., Colonel J. Cummin, C.B. C.I.F., and the young Hospital Apprentice Arthur Fitzgibbon. The chapter on Courts-Martial is full of interest. The chapter on the "first half of the 19th century" traces the history of the service up to the time of the Mutiny, and a list of the 30 I.M.S. men made Fellows of the Royal College of Surgeons in 1844, on the establishment of that grade is given.

The chapter on the Mutiny is full of a melancholy interest, 28 men of the I.M.S.

(Bengal) were killed, 9 of them at Cawnpore, and account is given of the reported death of Dr W W Ireland, who survived to die only a few months ago, and a very interesting list of no less than 44 Mutiny veterans who were still alive in May 1913 (three of which have since died).

The next chapter, "The Crown succeeds the Company," contains Lord Dalhousie's great Minute on the service, dated 1st February, 1856 in which many changes and improvements since carried out, are advocated by the great Pro-consul and the important Warrant of 7th November 1864 is given in full. After the issue of this Warrant the I M S, which had been closed to competition for 4½ years, was reopened on 1st April 1865. At the examination held on that date Kenneth Macleod (still surviving) was first on the list. T Cleghorn and Robert Harvey whom many of us well remember and both of whom reached the highest appointment in the service, were in this batch of 1865. The last of the Company's officers to retire was W R Rice who many still remember as Surgeon-General, he died in 1903. The combined or general service came into being on 1st April 1896 (G G O No 260 of 6th March 1896) and the first officer to enter the combined service was A A F Macauliffe, a brilliant biologist who too early died of cholera in Calcutta, on 11th October, 1902, since then the first man in the new service has been and is Major J M Woolley, M.B., (Cantab.), now Superintendent of the Central Jail at Dacca.

The changes and new Warrants of recent years have been many and all are detailed in Lieutenant-Colonel Crawford's chapters, down to the existing and latest Royal Warrant dated India Office, June 1913.

Chapter 40 gives a description of life in the service at the present time and a very interesting note is given on the mortality and longevity of men in the service and an account of the two Hintons in the service, both of whom reached to over 100 years, one of whom, Surgeon-Major H B Hinton, is still alive, who entered the service in 1839. Reference is also made to recent and existing distinguished medical officers and their work, e.g., Vandyke Carter, Edward Hare, Sir R Ross, D F Keegan P J Feyer and Sir Leonard Rogers.

The chapter on The Future will be read with extreme interest and the despatch of Lord Morley is given in full.

Chapter 42 is on Hospitals in India and is of extreme historical interest and the early hospitals in Bengal, Madras and Bombay are described. The next chapter deals with the kindred question of medical education in India and another is on medical societies in India and on medical journalism and here we may thank the author for his kindly remarks on the *Indian Medical Gazette* founded in 1866. The following is the list of editors since that date —*

- D B Smith 1866
- J A P Collis 1867
- C R Francis 1868
- J T Carter Ross, 1869-70
- N C Macnamara 1871-73
- Kenneth McLeod, 1871-1892
- J C French 1875-76
- L A Waddell, 1884-85 and 1897-99
- W. J Simpson, 1889 and 1897
- A Crombie 1892-93
- D M Mon 1897, (and 1903-4)
- F P Maynard, 1898
- C H Bedford, 1898
- W J Buchanan, present editor 1899 to date
- D McCay, 1909-10 (leave vacancy)

This fine history closes with an interesting chapter of miscellaneous addenda and a most complete bibliography and list of works consulted.

We have not referred to all the chapters, e.g., those on pay, furlough and leave pensions, funds, all of which are full of matters of very great interest to every man in the service.

We have completed our review of the vast amount of interesting matter contained in these volumes. They extend from the first beginnings, through the 150 years of the active existence of the service as such, down to the troubled times of to-day.

It is a grand record and splendidly recorded. Not the least portion of the great work of the English Race in India has been the introduction of Western Medicine and Western Sanitation in that great country of the East.

To the historian of India the work is of permanent value, to the officers of the I M S it

* In some cases as joint editors, or temporary, during a leave vacancy.

must remain a "possession for ever," and the thanks of every man in the service, retired or on the active list, are due to Lieutenant-Colonel D G Crawford for having made a life-study of the history of a grand Medical Service and for having put on record the great work done by that service in and for India

Current Topics.

STUDIES UPON LEPROSY

PUBLIC Health Bulletin (No 61) issued by the United States Public Health Service (Washington, Government Printing Office), contains six articles on leprosy of considerable interest

Dr G. W McCoy, the Director of the Leprosy Investigation Station, has an interesting note on glandular tuberculosis among lepers at Molokai, but the glands in no way differed from ordinary tuberculosis glands observed among ordinary non-leper patients. The same writer and Dr W J Goodhue, the Medical Superintendent of the Leprosy Settlement at Molokai, Hawaii, has collected all available data on the risk of infection incurred by healthy persons living at the Leprosy Settlement. The evidence concerns adults only and the duration of contact was for a few months to many years —

For convenience of classification and to emphasize the nature of the association we have divided the contacts into two classes. First, the "*kokua*" or clean persons who have lived with lepers, usually in conjugal relationship, second, other persons, including members of nursing and religious orders, all of whom lived in less close association with the inmates than did the *kokuas*.

The kokuas — The word "*kokua*" is a Hawaiian term for which there is no exact English equivalent. Perhaps the nearest translation would be *helper*, but it means rather more than this and is employed almost exclusively to designate a person who has voluntarily gone into isolation at the settlement for the purpose of affording aid and companionship to a leper, usually the husband or wife, sometimes another relative, rarely a friend. The *kokuas* are practically all Hawaiians or part Hawaiians.

The Territorial Board of Health is authorized by law to permit a clean adult to accompany a leper to the settlement when the circumstances appear to warrant it. Upon the death of the leper or for other reasons the *kokua* may leave the settlement after a physical examination to determine freedom from leprosy. It frequently happens that the person remains and marries another leper.

Contacts other than kokuas — The members of this group are all Caucasians and include priests, Franciscan sisters, brothers of the Order of St Francis and others whose association with lepers is of a similar nature. They come into intimate contact with diseased persons in nursing them, in applying dressings to surgical cases, etc. They do not at present live in the same houses with the inmates of the settlement, indeed in most cases lepers are prohibited entering the houses of these clean persons.

SUMMARY

Of 119 men, practically all Hawaiians or persons of mixed Hawaiian blood, living in the same house with lepers, 5 (4.20 per cent) developed leprosy.

Of 106 women, practically all Hawaiians or persons of mixed Hawaiian blood living in the same house with lepers, 5 (4.71 per cent) developed leprosy.

Of 12 women, all Caucasians, who lived in such contact with lepers as is necessary in administering to their bodily and spiritual needs, none developed the disease.

Of 23 men, all Caucasians, who lived in such contact with lepers as is necessary in administering to their bodily and spiritual need, 3 (13 per cent) developed the disease.

So far as we could ascertain, the shortest period in which the disease developed after the person entered the settlement was 3 years (2 cases) and the longest 17 years.

Mention should be made of the fact that in some of the earlier reports from the settlement we find it stated that a very large percentage of clean persons became lepers, thus in a report made in 1886 it is asserted that 17 of 178 *kokuas* became lepers in 1 year, and in another, made in 1888, that 23 of 66 *kokuas* examined had become lepers. Whatever may have been the facts in the early days of the settlement, it is certain that no such state of affairs exists at the present time. It is just possible that the improved general sanitary conditions under which the settlement has been operated in recent years may have lessened the risk of infection.

Dr Moses T Clegg shows that —

"Eleven cases of leprosy, all free from obvious signs of syphilis but all giving the Wassermann reaction, were negative to Noguchi's luetin reaction."

Dr H T Hollmann examines the question of the presence of acid-fast bacilli in the secretions and excretions of lepers and gives the following conclusions —

Acid-fast bacilli, morphologically and tinctorially, like B lepre, were found in various secretions and excretions, as follows:

Nasal mucus in 89.65 per cent of nodular cases, in 66.66 per cent of mixed cases, in 45.45 per cent of anesthetic cases.

Saliva in 21.73 per cent of nodular cases.

Sputum in 3.22 per cent of nodular cases.

Urine in 7.14 per cent of nodular cases.

Sweat in 14.28 per cent of nodular cases.

Lachrymal secretion in 5.26 per cent of nodular cases.

Acid fast bacilli were not demonstrated in the feces of four lepers examined.

The Director Dr McCoy examines the question of the fecundity of Hawaiian lepers. He points out that the birth-rate is usually assumed to be much lower than that of the healthy part of any population in the same country and Manson has stated that "lepers early become sterile." Dr McCoy summarises his examination of the available figures as follows —

(1) The birth rate of the Molokai settlement is probably about two thirds as high as that of the non lepromatous members of the same race outside, but the data for an entirely just comparison are lacking.

(2) The birth rate among lepers appears to depend on the fertility of the male, which probably is materially reduced.

(3) The fertility of the female does not appear to be impaired.

COCAINISM IN THE UNITED STATES

The profession has long been aware that cocaineism has long been prevalent, chiefly among

the coloured inhabitants of the United States of America and "cocaine sniffing" has been frequently legislated against in that country.

Most of us know the very considerable prevalence of the vice in the large cities of India, it was not however till we read an article by Lieut. W. B. Meister, of the Medical Corps, U. S. Army, that we realised that some soldiers of that army had acquired the vicious habit. Eleven men in an Infantry regiment had acquired the habit in Texas.

Under the heading "How Acquired," Lieut. Meister writes as follows —

"In the army, however, the greater number of habitués take their first cocaine rations for its desirable effects *per se*. Seldom, or never, does a soldier enter upon his first cocaine debauch on his own initiative. He is usually induced to try his first "snuff" by some one who is already a slave to the drug, and who disdains to enjoy its pleasures alone. Sometimes a tent mate, more often a prostitute, first opens to the novitiate the Paradise which is soon to become a Hell. An individual rendered weak by alcohol, or, perhaps, one having too much confidence in his ability to discontinue the use of cocaine at will, succumbs promptly and after several trials, does not trouble to resist at all."

It appears that in the case of the Texas regiment a local prostitute wrote to a large wholesale firm in a distant city representing herself to be a druggist and sold it to the men at an enormous profit.

It was formerly taken hypodermically, Lieut. Meister tells us, but nowadays disreputable druggists sell "neat little cartons" containing crystals of pure "cocain hydrochloride, to be taken per nasum from a quill or knife point." The crystals are usually called "coke" or "snow" and habitués are known as "coke-snuffers," "snow-birds," "jungle-bellies" or "reindeers," and other such characteristic trans-Atlanticisms. Lieut. Meister describes the symptoms of the average "cocaine snuffer" as follows —

"The symptoms of the average cocaine "sniffer" are mostly subjective. Dreaminess, apparent inability to perform correctly ordinary duties, loss of reliability, promptness and punctuality, and varying mental aberrations suggesting paranoia, arouse suspicion. Paranoiacs are usually egotistical, self reliant and conceited. Cocaine victims in matters connected with their habit are less self assertive and more easily led than the normal individual. Objectively, there are two symptoms of value, the nares are either blanched immediately after a 'snuff,' or deeply congested and swollen at a later period, and the poor victim cannot undertake his share of the arduous duties of the soldier."

After prolonged use of the drug, loss of digestive power, insomnia, enfeeblement of the intellect, emaciation, ascites, miasma, decay of the teeth, foetid breath, amblyopia, visual hallucinations and complete anorexia, form a group of symptoms which rival the worst effects of the opium habit. Pupillary dilatation, though much vaunted, is seldom seen, and is after all merely relative. Overdoses are manifested by pallor, clammy perspiration, subnormal temperature, rapid, shallow respiration, rapid, small pulse, intermittent cardiac action, loss of consciousness, convulsions, and complete collapse. Rapid rise of temperature may

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The treatment of fractures will doubtless long continue to afford opportunities for progressive and original work, and it is probable that we are not yet even approaching finality. But the opinion of the surgical world on one or two innovations which were regarded as revolutionary, when first definitely presented in their present form a few years ago, is now slowly crystallizing out, and it is for that reason that a symposium, like this, in the special number of the American Journal of Surgery which is now under consideration, is particularly welcome. The main questions, of course, resolve themselves into two, open (or operative) treatment *versus* non-operative, and to what extent massage and movement are advisable, for, with regard to the latter, there is probably no one now who, given time and opportunity, does not endorse to some degree the principles so long advocated by Lucas-Championnière. The majority of the articles in the present issue, as we should expect, are concerned more or less with the consideration of the open treatment, and it is interesting to note, in the beginning, that the committee appointed last year by the American Surgical Society appears to have been substantially in agreement with the English Committee which dealt with this subject some time previously. Dr. Van Duyn points out, however, that the American Committee laid even greater stress on the personal element than the English Committee had done, and divided surgeons, for the present purpose, into three classes those inexperienced in operative technique, those with experience but poor facilities at their command, and, thirdly, men in every way competent and with good operating rooms and expert assistance at their disposal. It was only to the last of these groups, says Dr. Van Duyn, that the Committee gave sanction for the frequent and free use of the open method. There is, indeed, a general consensus of opinion, both British and American on this point, and further, the whole-hearted supporters of Sir A. Lane, in his contention that open operation should be the routine treatment for simple or (as they are called by the American Surgeons) closed fractures, would appear to be a small, and a diminishing body, even in America, much as the work of that very original and successful operator has been admired and discussed there.

With regard to the technique of open operation, also, many of the contributors are by no means in agreement with Lane. There seems to be a tendency, similar to that which has taken place in intestinal surgery, to revert to the older and simpler methods. Just as various kinds of intestinal suture have displaced the Murphy button and other more or less complex mechanical contrivances, so a considerable number of surgeons are now recommending sutures instead of metal plates and clamps. Dr. Magruder remarks that the use of these latter devices is

growing less and less every year, he recommends chromic gut or tendon sutures in cases of little tension, and silver or other wire where the strain is great. Dr Van Duyn goes further, and says that so great are the objections to the use of plates that he has given them up altogether. Several writers remark that so far from accelerating union, the presence of plates, and prolonged immobilization necessitated by their use, actually retards union, while one surgeon states that in his experience of plated cases 75% have had to be removed subsequently. Dr Estes, however, still considers that when reduction is not easily obtained, or its maintenance is doubtful, the application of a metal plate gives the best prospect of success, and Dr Albee also has a good word for plates, in recent fractures. Several contributors speak highly of the use of bone grafts, it is pointed out that they may be employed in two ways. Dr Buckner recommends them in cases of non-union, merely to promote osteogenesis, while Dr Albee has a most interesting article on the use of an inlaid bone graft, long enough and strong enough to assist in fixation and at the same time, being of living bone, intended to act by stimulating osteogenesis. An electric engine, with parallel circular saws, is employed for cutting the inlay grafts and the beds to receive them, and it would probably be useless to attempt this procedure without the special appliances described. The results of both operations are stated to have been excellent. Other papers deal with fractures of special bones. Dr Cotton gives an account of injuries of the astragalus, and, remarking that these are not rare, and the results of mismanagement may be very serious, lays stress on the advisability of studying them 'for after all,' he says, 'it is the expected that always happens, if one is reasonably instructed as to what to expect.' He divides his cases into eleven classes, and the article is illustrated by numerous radiograms. Two articles are devoted to fractures of the skull, and Drs Luckett and Stewart take up the position that all severe head injuries should be systematically radiographed. They admit that this is often a very difficult procedure, particularly in comatose and unfit cases, but argue that under present conditions the majority of fractures of the skull remain undiagnosed, some of them with disastrous results. This proposal is an instance of the very thorough way in which our colleagues across the Atlantic follow up a line of thought to its logical conclusion, and, while perhaps not subscribing unconditionally in the present instance, where routine X-ray examination would lead to much disturbance in a class of case that it is particularly desirable to keep at rest, one admires the industry and enthusiasm which prompt the suggestion. The case of immediate operation for appendicitis comes to mind in this connection. In that instance the Americans have brought round many British Surgeons to their way of thinking, and it is possible that the future may see the profession converted to the course

above recommended; but, granted always reasonable care, and the use of radiography if any special indications exist, it is fairly arguable that head injuries in general would stand to lose more than they would gain, on account of the unavoidable disturbance of a complete X-ray examination. Another fracture which has an article to itself is that of the olecranon. Here Dr Shea advises open operation in all cases in which the fragments cannot be brought into direct apposition by other means. The procedure he recommends is to pass a silkworm gut suture round the two fragments, the ends of the suture emerging through the skin below, and tied over a small sponge. This is reinforced by catgut sutures through the periosteum and fibrous tissue at the line of fracture. Dr Shea attaches importance to the avoidance of any drilling of the fragments.

It is impossible in a mere review to do more than run over the salient points of a series of articles such as this, anyone interested in the subject must be referred to the Journal itself, which, if this number is to be taken as a fair example, is a most wonderful production at the modest annual subscription of 6 shillings.

RAT EXTERMINATION AND PLAGUE

The following useful note by Dr. Francis Clark, Medical Officer of Health in Hong Kong, shows not only what has been done in Hong Kong, but ably discusses the difficulties of rat extermination as a measure for the prevention of plague —

In the Spring of 1909 a wholesale rat poisoning campaign, lasting about a fortnight, was instituted in Kowloon with a view to seeing what effect it would have on the incidence of plague, and in the Spring of 1910 the same scheme was extended to the city of Victoria.

Early last year and again this year I discussed with Dr Pearce and yourself the very inadequate results of this method of procedure, and pointed out that it involved taking the staff away from house cleansing work at a time when their services in that direction were of most value. I had previously organized a system of dealing with infected blocks and areas, for as soon as a plague rat is discovered the Inspector of the District is instructed to distribute rat poison in the vicinity, inspect all neighbouring houses, fill up rat runs, attend to missing gratings and generally to see to the protection of the people in that infected area, and this method of procedure has been pushed as far as the limited staff of the Department will allow.

I stated at a recent meeting of the Board that there had been in my opinion a very large increase, of late years, in the rat population of the city of Victoria, and I based this opinion on the increasing returns of rats collected and examined. The figures are as follows —

CITY OF VICTORIA

Rats collected and examined.

1910	..	56,001
1911	..	65,927
1912	..	70,633
1913	..	86,933

It might be argued of course that these figures merely indicate more thorough and efficient methods of rat

extermination, but I am sorry that I cannot accept this explanation.

I have stated elsewhere that this rapid increase in the rat population is the natural result of the large augmentations of the native population during 1911, when some forty to fifty thousand Chinese poured into the Colony, and in 1913 when an even larger number sought refuge here. Apart from the question of migrations en masse and of devastating epizootics, the number of rats in any area is almost wholly dependant upon the available food supply for these animals and the most obvious result of human overcrowding when carried to excess is a marked increase in the amount of waste food both in the houses and in the yards and lanes adjacent thereto, and the crowding of much unnecessary furniture and baggage into the houses, thus providing hiding places for rats.

The problems which have to be met are —

(1) the limitation in the number of rats, and (2) the exclusion of rats from dwellings and workshops.

The only feasible method of limiting their numbers is to limit the food supply available for them, this consists mainly of the waste food from dwellings, markets, factories, etc., and rats will enter houses at night to search for food and will also feed in the yards and lanes surrounding them, if garbage is to be found there.

The Board have recently organized an evening collection of rubbish in order to remove as much as possible of this refuse before the rats venture out from their runs and hiding places, and householders are required to keep the day's waste in covered metal bins, until it is carted away by this Department.

In addition to this, we have various Regulations aimed at securing the exclusion of rats from dwellings, such as the guarding of all openings by iron gratings, the prohibition of ceilings and hollow walls in all new buildings and their removal from infected blocks, the concreting of ground surfaces, and so on, but all these matters require the active co-operation of the individual householders if they are to prove effective and I am sorry to say that there are many tenants in the city, European as well as Chinese, who make no attempt whatever to render or maintain their premises in a rat proof condition. There are ten thousand houses in the city alone, and the present staff is only able to visit and cleanse each house about once in six months, at these visits tons of rubbish are collected and carted away, rat runs are filled in and defects are noted for notice on the owner or tenant, as the case may be, but without greater assistance from the community as a whole we cannot hope to secure the eradication of Plague.

Wholesale rat poisoning as a plague preventive measure has failed, not only in Hongkong but in many other infected districts, owing to the enormous fertility of the rat in the presence of an ample food supply, and a recent official pronouncement contained in one of the Reports of the United States Public Health Service reads "Deratization as a general measure is not rational. The warfare against rats should be made by the improvement of housing conditions. Habitations should be kept free of garbage and offal which attract rats and serve for their nourishment." In this opinion I entirely concur.

We have in Hongkong the *Mus rattus*, commonly known as the English black rat, with large ears, a sharp muzzle and a tail longer than the head and body combined, also the *Mus decumanus* or Norwegian rat, grayish-brown in colour, with small ears and a short thick tail, and many gradations between the two. In the presence of an ample food supply, rats will commence breeding when they are about 3 months old, will have three to five litters a year and each litter will average 8 or 10 young. It is not surprising therefore that within a very few months after a general slaughter the rats are found to be as numerous as ever.

Such general slaughters cannot moreover be repeated indefinitely, for rats become so wary that they avoid the poison laid for them, and a glance at the Table I append hereto will show that the effects of past campaigns have

been insignificant—the weekly figures show an increase of a few hundreds of extra deaths, as the result of the distribution of over 350,000 rat pills, and occasionally a falling off in numbers for the following week or two, but then the numbers resume their normal range and the effects of the campaign, so far as total rats and infected rats are concerned, cease. There is another danger, however, connected with these attempts at wholesale slaughter, when the limitation in numbers is not permanently maintained, and that is that a considerable proportion of the rats so killed off have acquired immunity to plague as the result of having survived an attack of the disease or are naturally immune, these are rapidly replaced by young susceptible rats, and consequently the attempt at eradication is a failure. No doubt in time and after many generations the immune rats will be able to produce comparatively immune progeny, and this phenomenon accounts for the gradual dying out of many diseases which formerly were rampant, a matter which is referred to in a recent article in *The Times* on Rats and Plague and was reprinted in the *Hongkong Daily Press* of the 8th instant.

To sum up, therefore, I strongly advise that all our efforts and all the efforts of the community, should be concentrated upon the speedy removal of refuse of all kinds from the precincts of dwellings and offices, and that no measure which will help to exclude rats from these premises should be neglected.

In an article in the *British Journal of Surgery* (No 3, January 1914) Mr R J Willan gives not only an admirable resume of the evolution of litholapaxy, but much useful information on the operation. He alludes to that "Unique Stone number of the *Indian Medical Gazette* (August 1900) where not only the statistics but also the operative experience of famous lithotritists are given" and gives some interesting notes on the largest calculi removed through the natural passages. He quotes the following records, all of them from India, except that of Milton of Cano—as follows—

Milton's	.	12 oz
H Smith, I M S	.	9 $\frac{1}{2}$ "
J A Cunningham, I M S	...	8 "
Henderson, I M S	"	8 "
H Smith	.	7 "
H Smith	.	6 $\frac{1}{2}$ "
P J Freyer, I M S	..	6 $\frac{1}{2}$ "
H Smith	.	6 "
H Smith	.	5 $\frac{1}{2}$ "
At Jaipur Hospital	.	3 $\frac{1}{2}$ "
D M Davidson, I M S	..	3 $\frac{1}{2}$ "
	—	3 $\frac{1}{2}$ "

A correspondent informs us of a very flagrant and objectionable method of advertising used in the name of a Dr _____ M B, ob. v (Edin), who announced himself as from the Royal London Ophthalmic Hospital and as having attended, as eye specialist, four well-known Indian Chiefs or Noblemen. The advertisement states that this Indian graduate of Edinburgh can be seen at a certain named hotel and adds—"Consultation free 2 to 3 P.M."

This most unprofessional advertisement was thrown into the carriage of our correspondent as he passed the railway station where the self-styled "specialist" was then staying.

Surely it is time to put a stop to this gross breach of professional custom.

Reviews.

The Treatment of Cholera. A Cure.—By Dr A G NEWELL, Lahore, Civil & Military Gazette Press, 2s

THE title of this pamphlet "a cure" rather prejudices one against it, and when we find it is founded on an experience of only three cases, we cannot but think that Dr Newell is at least premature.

The "cure" is tincture of iodine, which drug, as our readers will remember, Dr Newell introduced as a remedy for small-pox eruptions and a Salvation Army man has recently advocated the same drug for plague.

It may be the great use of this simple drug in surgery that has made it so fashionable.*

Dr Newell's first case, in a hospital sweeper in Lahore, recovered after taking 1 minim of the tincture of iron with rectal injections (1 in 200), the former given every half to one hour and the injections every hour.

Dr Newell is too scientific a man to base a "cure" on the recovery of three severe cases of cholera, so he gives a long series of experiments on pure cultures of the cholera vibrio.

We think that instead of publishing a pamphlet on such a slender foundation, Dr Newell would have been better advised to publish his results and his experiments in a medical journal.

No doubt this simple remedy is worth trying, but in one's experience so many "cures" for cholera have been put forward that one cannot help being sceptical. We may "wait and see."

Jungle Days—By DR ARLEY MUNSON, D Appleton & Co, London Price 10s 6d

THIS book is an interesting record of the experiences of a young American woman doctor and missionary during a few years in India. The story is told with simplicity and modesty.

The book will be read with pleasure by those who are interested in missionary medical work. It is eminently suited to the parish library.

Isolation Hospitals.—By the late FRANKLIN PARSONS, M.D., Cambridge Public Health Series, 1914

THE series of Manuals of Public Health, published and proposed by the Cambridge University Press, promises to be a most useful and practical one.

The present volume on Isolation Hospitals is certainly one which will be of use to all "local authorities," and others interested in the establishment of isolation hospitals for infectious diseases. With the advance of a sanitary conscience among a people, such hospitals must become more and more necessary and more and more used. In

earlier days and among backward and primitive peoples much opposition is felt and many of us remember in India about 15 years ago the plague riots and the burning of plague camps and hospitals by the very people for whose good they were intended. In India the people and the educated classes are only slowly emerging from the dark ages as regards sanitation, so this attitude must be expected and met.

The first isolation hospitals were the Lazai houses for the isolation or rather segregation of lepers, in the 13th century it is said almost every town in France had its "Lazai house"—the plague led to "Pest houses," and at Sevenoaks an old house with this name existed down till 1902, and was used.

"Fever hospitals," according to Dr Murchison (who became a great fever expert after his retirement from the Indian service), were established as a result of the great Typhus epidemic of the 18th century, the London fever hospital was opened in 1802, and a previous small-pox hospital in 1745.

The Public Health Act of 1848 had no clause authorising the establishment of isolation hospitals. The Metropolitan Poor Law Act of 1867 led to the establishment of what is still quaintly called the Metropolitan Asylums Board, which is now the ultimate public health authority of London. Other important Acts were the Diseases Prevention Act of 1855, the Sanitary Act of 1866 due to the cholera outbreak of 1866.

The uses of an isolation hospital are threefold (1) to cure or relieve the sufferer, (2) to separate the infectious sick from the rest of the community, to prevent the spread of the disease, (3) and to obviate the difficulties, inconveniences and pecuniary losses which the presence of infectious disease might entail.

The book before us ably discusses the various problems which have arisen, and establishes their utility, another chapter deals with substitutes for isolation hospitals, e.g., temporary reception places, arrangements with householders to receive infectious cases, removal of unaffected persons from infected houses, payment of wages to wage-earners to abstain from work and the "watcher-messenger method" employed in backward districts.

Many of our readers will turn with special interest to the chapter on the designs of such hospitals. It is suggested that a limit of 300 beds should be a maximum and 12–20 a minimum number of beds. As regards size of wards—for wards with several beds, the L G B lays down 12 ft of wall space, 144 sq ft of floor space. The 12 ft wall space is medically most important—and in diphtheria and enteric cases a wall space of 15 ft is allowed.

We can confidently recommend this useful book to all public health authorities. We have only touched on a few of the chapters—we may add that there is a most useful section on tuberculosis sanatoria. The book is well illustrated and

* For the extent to which iodine has become fashionable, see a most useful resume on *Iodine Therapy* in "The Prescriber," April 1914.

well printed, has complete bibliographies, useful appendices and an excellent index.

Preliminary Report on the Treatment of Pulmonary Tuberculosis with Tuber-culin—By NOL D. BARDWELL, Publishers, H K Lewis, Gower Street, W.C., 1914

This is a contribution to the question of the value of tuberculin as an addition to sanatorium treatment. The case were for the most part selected and treatment lasted on an average of six months. It must be noted that tuberculin appears to have been forced on the staff of the Midhurst (King Edward) Sanatorium by the patients and their medical advisers from outside, and the conclusion is inevitable that there was an absence of that psychological element from the therapy on which all advocates of tuberculin so strongly insist. The method of employment was by increasing doses with avoidance of reactions where possible. The dangers of many reactions are pointed out, but we deem it fortunate that the author has not a greater list of disasters to record than the few he does, as it appears that reduction is not made in the dosage following a reaction. In case 17 we note an actual increase of dose is given after a reaction, and that in the face of a loss of two pounds in weight. Based on statistical grounds, the author's results (on 154 cases) are but questionably favourable to tuberculin. Professor Karl Pearson in an introductory note points out that it is not easy to see round facts, much less percentages, and we ourselves would prefer to avoid such statistics, especially with so prolonged and variable a disease as pulmonary tuberculosis. With Sahli of Berne we are satisfied that a therapy is of use if by the careful observation of a number of cases there is a coincidence of time of improvement with the commencement of treatment. Dr. Bairdswell's report is an example of carefully recorded observation and will repay careful study, but we trust that, in fairness to tuberculin therapy, the above parts will be considered in conjunction with Bairdswell's findings. The further report which is indicated should be of much interest and value.

The Medical Annual, 1914.—Bristol, John Wright & Sons, Ltd. Price 9s 6d.

THIS year-book is now recognised to be indispensable by most medical men, and we have no hesitation in recommending the annual volume for 1914.

The present volume is some 100 pages larger than the previous one owing to the large number of details added, especially in technique, diagnostic, clinical and surgical.

The tropical diseases are in the hands of Sir L. Rogers and this is enough to say that they are ably handled and that the record is up-to-date.

It is difficult to select from so many good articles, but we would call special attention to the section on intestinal surgery by Sir B. Moynihan

and H. Upcott, to the useful note on Malingering by Sir John Collie, the various articles on syphilis, the article on typhoid by Dr Goodall, on rectal diseases by Sir C. B. Ball, on fractures by Dr Priestly Leech, on radio activity by Mr C. T. Holland, and the most useful review of therapeutic progress by Dr F. J. Charteris, the various articles on tuberculosis, the most useful appendix on new appliances and to the chapter on state medicine.

The volume can certainly be recommended to all our readers. It is especially well illustrated.

Principles of Surgery—By W. A. BRYAN, A.M., M.D., Professor of Surgery and Clinical Surgery at Vanderbilt University, Nashville, Tennessee. London and Philadelphia: W. B. Saunders Company, 1913. Pp. 677. Illustrations 224.

IT has been the endeavour of the author in this volume to so present the facts upon which surgical diagnosis and treatment rest that they may form for the student and the practitioner a foundation upon which a clear understanding of the practice of surgery can be evolved.

The author can be congratulated on having attained his aim.

The book opens with a chapter on Surgical Bacteria, discusses inflammation, describes the pathology and treatment of the various forms of ulcers, gives an account of the specific infective diseases such as anthrax, glanders, etc., treats of shock and haemorrhage, etc., and closes with several chapters on tumours.

It would appear as if the author was unaware of Besredka's work on sensitized living vaccines when he writes.—“The use of living bacteria, if they could be so attenuated as to be harmless, would accomplish it (raising of opsonic power), but would be manifestly objectionable and subject to almost prohibitive limitations.”

In the chapter on “The Process of Healing” regeneration of bone is somewhat scantly dealt with. The role of the periosteum as a bone-forming membrane or otherwise surely merits a discussion. Although it is true that the author does not lay down that in fractures new bone is formed from the periosteum as used to be considered the case, it is a pity that he does not emphasize the fact, as has been proved by experiments, that the periosteum apart from osteoblasts, which may have adhered to its deep surface is nothing but a limiting membrane.

We quite realise that, in all books written with a purpose such as the one under review, an immense amount of discrimination is required as to what should be left out and what recorded, and that everything cannot be inserted or everyone pleased. Seeing however that, in the chapter on “Suppuration,” the treatment of whitlow merits a small paragraph, mention might be made in future editions of where retro-pharyngeal abscesses should be opened.

The article on "Erysipelas" is full, but the remarks on its diagnosis are somewhat scanty.

The author evidently does not consider the magnesium sulphate treatment of tetanus worth mentioning. In one case in which we tried it the patient clamoured for its repetition when its effects had worn off, so much relief did he obtain.

The chapter on rabies will hardly be accepted as up-to-date in India. The method of treatment advocated (the dried cord method of Pasteur) was abandoned in India in 1908 for the following reasons — 1. The cords were often septic owing to the animals being allowed to die and owing to the method of dessication. 2. The large amounts of nerve material used led to the formation in susceptible patients of a neurolytic serum and neuro-paralytic accidents. 3. The dosage was inaccurate. 4. Large numbers of rabbits had to be used. The method now adopted in India consists in the inoculation of a dead carbolised virus obtained from the brains of rabbits becoming fully paralysed on the 10th day as a result of a continued series of sub-dural inoculations of what is known as "Street Virus".

We are surprised to read that the Negri bodies can be found in brains long decomposed. We had always understood that Negri bodies being delicate intra-cellular structures could only be found in brains properly preserved. Appearances in the decomposed brain are so deceptive that owing to disorganisation nothing can be definitely vouched for. For a proper demonstration of Negri bodies the animal's brain should be sent to the pathologist in Zenker's fluid and not in neutral glycerine. On page 255 we read — "If it (the animal) fails to show positive symptoms of rabies within 40 days the patient can be dismissed without preventive treatment." We quote for comparison directions as issued from the Pasteur Institute, Kasauli. "If the biting animal can be found don't destroy it, but keep it tied up under observation for 10 days. If it remains alive and well for 10 days after biting the patient, the patient can not have been infected, even should the animal develop rabies at a later period."

The author states that Tubercular Epididymitis is rarely secondary to lesions in the prostate, seminal vesicles, etc. *Quot homines, tot sententiae.* There are writers who maintain that infection of the testicle takes place in tuberculosis as in gonorrhoea by means of the cord and who bring forward clinical, pathological and experimental evidence in support of their views.

In the chapter on syphilis we find some contradictory statements. For instance, on page 314, we read — "There is usually a rise of temperature at the beginning of the secondary stage." On page 311 we are told that the secondary stage starts with the eruption. And yet on page 314 we read that the temperature returns to normal when the eruption appears. We can find no mention in this chapter of syphilitic epididymitis.

The discussion on the treatment of fractures is very poor indeed, massage being absolutely ignored. The only form of non-operative treatment of fracture advocated is that of immobilisation by splints and plaster, the other two forms, namely, Lucas-Championiere's method of massage with mobilisation and Baedenhuer's method by extension are left severely alone.

Likewise the chapter on "Anaesthesia" is not up to the standard reached by the other chapters. To recommend the injection of 1 grain of cocaine for local anaesthesia is to court danger.

The author remarks on a steadily progressive increase of cancer in America which cannot be explained by the more accurate diagnostic methods now at the disposal of the profession. Statements have lately emanated from the United States alleging an alarming increase in cancer. As Dr Bashford has pointed out in *The Lancet* such statements have only the value of vague rumours, they are based on figures and not on statistics and, until the American people wake up to the necessity of enforcing proper registration laws, discussion as to the real or apparent increase of cancer in America ought not to disturb the equanimity of anyone.

Printer's errors are few. We note only the following — Though written for *Thought* on page 110, *Uterine* for *Uteral* on page 115, $\frac{1}{2}$ of $1\frac{1}{2}$ for $\frac{1}{2}$ to $1\frac{1}{2}$ on page 206, *Pain of defecation* for *Pain on defecation* on page 215, closely for closely on page 328, Von Neve for Dr Neve on page 373, pits for *pups* on page 481, "Perhaps excretarily" on page 533 is an Americanism. On page 582 the word reason should be followed by a comma and not a full stop.

The Surgical Clinics of John B. Murphy, M.D., at Mercy Hospital, Chicago — Vol II, Nos 3 & 4 Price 35 shillings per annum. Published bi-monthly by W B Saunders Company, Philadelphia & London.

THIS journal still maintains its high standard of excellence. The chief feature of the third number is a clinic by Dr F H Albee of New York on the operation of bone grafting for the cure of Pott's disease. This operation appears to have a future before it, it is most ingenious, consisting of splitting the spinous processes and introducing a bone graft from the tibia between them, thus obtaining a fixation by the spine and in some cases a correction of the deformity. The method was demonstrated in two cases in Dr Murphy's clinic.

Other cases in this number are various arthroplasties, fractures and dislocations, tumours, &c., &c., covering a wide range of surgery. Dr Murphy's operation for procidentia uteri appears to be somewhat unnecessarily severe for use as a routine measure in patients who may be in bad condition for operation.

The fourth number contains an interesting study of the blood supply in and around the joints

profusely illustrated by skiagrams. There is also a very sound lecture by Dr. P H Kieuschel of Dr. Murphy's staff on vaccine and serum therapy with remarks by the latter. The other cases as usual are all very well worth reading.

The Practice of Surgery—By RUSSELL HOWARD, M.S., F.R.C.S., pp 1,204, with 8 coloured Plates and 543 Illustrations in the text. Publishers Edwin Arnold, London 1914.

THIS text-book embodies as far as possible the surgical teaching given at the London Hospital. The main object of the book is to give the student an introduction to surgery, and the author also expresses a hope that it may prove useful during his subsequent career, as special emphasis is laid on diagnosis and treatment. A careful perusal of many sections of this work has convinced us that this hope will be more than realized. The treatment of the subject is altogether admirable, the teaching is imparted in a methodical and succinct manner, and while free from unnecessary verbiage, is yet comprehensive. The arrangement of the text and the distinctness of the headings to paragraphs and sub-sections, materially contribute to this result. We can honestly recommend it to our readers and feel sure that it will deservedly take high rank amongst the standard text-books on surgery. The subject-matter is divided into thirty-seven chapters, in which pathological, diagnostic and therapeutic aspects are all duly considered. We notice with satisfaction that excessive space is not occupied in descriptive operative surgery. The publishers have done their share towards making the book a success. The coloured plates are excellent and the illustrations and skiagrams well executed. The print is unusually bold and legible and finally there is a very complete index. Taken altogether it is a model of what a text-book should be.

The Road to a Healthy Old Age.—By T O SCOTT, London, 1914 H K Lewis.

THIS is a very readable little book addressed to lay as well as medical readers by a veteran physician. "There are three things" (says the writer), "which old age must religiously avoid—hurry, excitement and last but not least anger." Much depends upon the condition of the arteries and the heart. Meat should be used in moderation, especially if there are any signs of hardening of the arteries, indeed, the saying "a man is as old as his arteries," attributed to Sir Samuel Wilkes, is the keynote of much in the book.

The little book strangely enough concludes with a chapter on the preparation and action of vaccines.

Practical Work in the Chemistry of the Garden.—By D R EDWARDES KEE, London, 1914, John Murray Price 1s 6d

THIS little book is intended for teachers and students of horticulture and gardening. It deals

with the chemistry of plants, soils, manures, fertilizers and of sprays and washes. It is a practical manual intended for the laboratory. The last chapter gives useful recipes for various insecticidal and fungicidal washes.

International Clinics. 23rd Series. Vols 1 & 2—Edited by HENRY W. CATTELL, A.M., M.D., Philadelphia, in collaboration with others. London & Philadelphia J B Lippincott Company, 1913. Price 35s net, the 4 vols.

We have already favourably reviewed previous volumes of this quarterly publication and feel constrained to remark, as we did when reviewing the 22nd series, that "The volumes contain a great deal of information, but, as always happens in a book compiled by many authors, the articles are unequal, some being excellent, while others are disappointing."

The difference in the style of writing is most marked. At times our interest has been more than held by the lucidity and the simplicity of the papers, whilst at others our amusement has been but stimulated by the very pedantry exhibited.

Dr James Welsh in his article on "Disease Simulation" inveighs against the use of other than simple words, remarking on page 66 of Vol 1 that George Eliot once said, "We map out our ignorance in long Greek names." What, we wonder, would be his criticism of the article in Vol 2 on Tuberculosis where the author uses such words as Dodecadactylon for duodenum, Phymatiasis for Tuberculosis & Phrenocomeia.

We presume that "Circulos Vitiosus" on page 107 in the same article is a printer's error.

In the two volumes under review will be found something of interest to everyone. Spatial limitation however forbids a reference to a few of the many themes presented to the reader.

Examination Papers (1) F.R.C.S. Ed., (2) Dental—By S LIVINGSTONE, Edinburgh.

THESE are very useful little books to medical men going up for the higher degrees and especially to medical officers on study leave. The F.R.C.S. Ed., is a fellowship much sought after and such a guide as the present little volume will be found most useful, both as a guide to study and as a test of book knowledge gained. The questions given in several years are here published in surgery and surgical anatomy and also in such "optional subjects" as advanced anatomy, aural and nasal surgery, gynaecology, legal medicine, ophthalmic surgery, advanced physiology and operative surgery.

The little book costs only 1/- and can be recommended to all prospective candidates.

Tropical Medicine and Hygiene—By C W DANIELS. Pt. Protozoal diseases, 2nd Ed (Calcutta Butterworth & Co), India, 1913.

IT is hardly necessary to recommend Dr. Daniel's volume on Tropical diseases due to

protozoa, to our readers in India. It is a well-known book and has established itself as a useful, practical and reliable book.

The present volume has been revised. It deals with Protozoal diseases, especially malaria, to which 70 pages are given. The chapter on yellow fever and on sleeping sickness are good and also that on kala-azar. The other diseases dealt with are oriental sore, relapsing fever, and tick fever, indeed the spirochaetal affections are particularly well done. Yaws and liver abscess are also discussed.

The book is a good one and contains sufficient information for students going up for diplomas in tropical medicine and hygiene. It is elegantly got up and well illustrated.

Dorland's Medical Dictionaries—By W. A. Newman Dorland, M.A., M.D. Illustrated Dictionary, 7th Ed. Pocket Dictionary, 8th Ed. W. B. Saunders & Co.

DORLAND'S Medical Dictionaries are well known, and the fact that the larger illustrated Dictionary has reached its 7th Edition and the handy Pocket Dictionary its 8th, is proof positive that they are well appreciated by the profession. We have used both for several years past and have invariably found them up-to-date, accurate and reliable.

The handsome Illustrated Dictionary is not only a complete medical dictionary, but it gives all the terms used in the kindred and allied Sciences, their definitions, pronunciation and derivation, together with many elaborate tables of arteries, nerves, muscles, bacilli, weights and measures, Eponymic tables of diseases, operations, signs and symptoms, also stains, tests, etc. In the past 13 years it has gone through six editions and now appears more complete than ever in the 7th edition. All the recent additions to the terminology of the medical science, especially marked in seriology, physiology, and pathological chemistry, will be found, over 5,000 new terms having been added to the last edition.

The smaller Dictionary is equally up-to-date and now appears in its 8th edition since 1898. The definitions and explanations are practically the same as those in the larger illustrated edition, but derivations and pronunciations are omitted. It is certainly good and reliable, but on the whole we recommend the use of the larger Dictionary. Both books are most elegantly bound and printed, and will add to the credit of even a firm with such a high reputation as that of Messrs. W. B. Saunders & Co, London and Philadelphia.

Diagnostic Methods Chemical, Bacteriological and Microscopical—By RALPH W. WEBSTER, M.D., Ph.D. 3rd Edition. London: Henry Kimpton, Glasgow: A. Stenhouse. (Pp. 692, 37 Coloured Plates, and 164 other illustrations 18/- net.)

DR. WEBSTER is to be congratulated on the appearance of the 3rd Edition of his well-known

work "Diagnostic Methods." The fact that a 3rd Edition should be called for so soon is a proof not only of the intrinsic value of the work, but also that it satisfies the needs of the modern clinician, who increasingly feels that laboratory research must go hand in hand with clinical bedside examination, and so help in the elucidation of difficult clinical problems. Probably, one reason why the work is so satisfying is that the details of the various diagnostic methods are lucidly explained, thus enabling one to carry out the examinations properly, and to interpret the results accurately. The work is divided into 10 sections dealing very fully, and in a most up-to-date manner, with the diagnostic methods of examination of the blood, the various excretions and secretions, exudates and transudates, and there is an excellent chapter on parasites, which are fully described, and well illustrated. The palm may perhaps be awarded to the section on the blood. It should be of great value, not only to senior students and practitioners, but also to special workers, we can especially commend the sub-section on parasitology of blood. A very full, yet lucid description is given of malaria, and the general changes in the blood in this disease, its value being enhanced by the excellent original drawings by Miss Hill.

Serum pathology and sero-diagnosis are clearly, yet fully, dealt with, and we have detailed accounts of both the original Wassermann test, and Noguchi's modification thereof. Abderhalden's recent work on the sero-diagnosis of pregnancy has been given in great detail.

The section on urine runs 200 into pages, and is probably one of the clearest and most up-to-date descriptions of urinary diagnostic methods to be found.

In these days in which examination of faeces is of such growing diagnostic value, it is useful to have such a good resume of recent work in this direction as is contained in this book, and the chapter on the parasitology of the faeces should appeal especially to workers in the tropics. Dr. Webster's book may be summed up as a comprehensive work containing all available and trustworthy information on "Diagnostic Methods," leavened with a wholesome strain of common sense in deductions to be drawn from such examinations.

Judging the book by the standard necessary for the special and general worker, we can give it the highest praise and can confidently recommend it.

Modern Problems in Psychiatry—By ERNESTO LUGARO. Translated by Messrs. DAVID ORR, M.D., and R. G. Rows, M.D. Published by Messrs. Steiratt and Hughes, publishers to the Victoria University, Manchester.

THIS volume, as can be gathered, is a translation from the original Italian of Ernesto Lugaro, and no one, with any knowledge of the subject,

can read it without realising the invaluable service rendered to English Psychiatrists by those who undertook the drudgery of this task.

The volume includes a "Foreword" from the pen of Sir Thos. Clouston, full of admiration for the profound and widespread knowledge of the writer and the reliability and soundness of his deductions, which advance so far as his facts warrant him, and there, combining caution with scientific enthusiasm, stop, refusing to advance into unfounded speculations.

The theme of the volume is the summarising, briefly but clearly and concisely, of our present knowledge of psychiatry from all its various aspects, anatomical, physiological, psychological, pathological, &c., the propounding of the various deductions and hypotheses to be drawn from these and the mapping out of lines for future research.

In this book the brain is recognised as "the acme and the object of the evolutionary process in nature" and of necessity in our enquiries into this subject "every biological, physiological and pathological fact and law in nature" must be called to our aid and our deductions based not on a consideration of one set of facts, drawn not from a consideration of the subject from one aspect alone, but founded on a survey of each and all of its aspects and corrected facts combined.

Throughout the book the error of working merely on psychic principles is denied, "the normal psychic phenomenon must always be examined in relation to its anatomical and physiological conditions, that is to say, the organic process which is its essential basis." If this be so, how much more necessary then is it to examine abnormal psychic phenomena not only in these relationships but also in that of their pathological conditions. From the very beginning the author, be it wittingly or unwittingly, is striking at the root of the tenets of the "Freudian school" and demonstrating the similarity of the system of psycho-analysis to that of rearing a building with undetermined foundations and tottering walls.

In his chapter devoted to psychology "he faces up the differences and the parallelisms of objective phenomena, physical laws and states of consciousness."

His chapter on anatomy lays special stress on the importance of Flechsig's association fibres and the part they play in the carrying out of the processes of normal mentalisation.

Cajal's "Law of Avalanche" is also ably handled in this connection and by it many obscure psychological phenomena are explained.

The structure and functions of the neuroglia are dealt with very fully and much importance is attached to the "antitoxic functions" which are relegated to it, in addition to those of "insulation" hypothesised by Cajal.

Sir Thos. Clouston in referring to this chapter writes "No student of the subject should omit to read what Lugaio says on those matters, for it seems to me to bring mental facts and brain organisation closer together, and makes them more comprehensible than any existing book in psychiatry."

Lugaio regards the pathogenesis of psychic disturbances from two points of view "The objective determinism of disturbances of the consciousness according to the laws of psycho-physical parallelism," which aspect he discusses alone in his chapter on pathogenesis.

The etiological chapter, in the light of much that has been written of late, is well worthy of perusal. Intoxications and infections, endogenous and exogenous, "occupy a most important position among the general causes of cerebral lesions"—"and the former are even more important than the latter." The effects of hyper-pyrexia, and of long continued febrile temperatures of lower degree, on the coagulation of the constituents of the nerve-cells, are all included under this head, but the importance of the toxic factor is again given great prominence, even in such conditions, as a destroyer of nerve-tissue and a stimulus to abnormal activity.

The "psychic causes" of insanity are treated with but slight attention—even sceptically, "an internal, unknown but organic anomaly in the brain constitution" being looked for as the fundamental cause in such cases.

The rôle Heredity plays as an etiological factor in mental disease is gone into very fully. The transmission of "acquired characters" is carefully dealt with in detail and corresponds closely with those generally accepted. Lugaio on the whole tends to minimise the effects of heredity as an etiological factor in mental disease. He looks upon "the Darwinian factor, the natural selection of fortuitous variations, as the primary cause of every adaptation, including also the phenomenon of heredity itself," and brings in the Lamarckian factor as a "late and most complex acquisition in the evolution of life." He distinguishes between an "anomaly," a "predisposition" and a "degeneration." Anomalies he considers to be nought but pathological products which have caused arrest in development, as originally promulgated by Yinchow, and refutes the atavistic hypothesis of Vogt. Similarly the "degenerations" are traced to their pathological origin and shown to be a "disease of the stock," a disease which either terminates the stock in course of time, as maintained by Morel, or is itself eradicated in time by fortuitous natural selection and favourable surroundings.

In his concluding chapter he again insists on a sound knowledge of anatomy, pathology, &c., being essential for all psychiatrists, as from these subjects much is to be hoped for in elucidating the many problems still to be solved in psychiatry.

The book is a masterly exposition of a profound and comprehensive knowledge of the subject dealt with and a brilliant example of scientific enthusiasm, and subtle reasoning combined with the necessary quota of caution which render the deductions and hypotheses arrived at invaluable.

Even those for whom the subject itself has no interest must profit by a perusal of the work and gain a true knowledge of the manner in which scientific research should be carried out and deductions drawn from its results.

In conclusion, one can but concur in the closing words of Sir Thos Clouston's admirable foreword "All our alienists and most of our physicians will do well to peruse it."

SPECIAL ARTICLE.

I.

A REVIEW OF THE EIGHTH REPORT OF PLAGUE INVESTIGATIONS IN INDIA

It is difficult to suppress a feeling of disappointment with the last report of the Advisory Committee on Plague in India. For though the report is full to overflowing of elaborate, laborious, and recondite researches, the practical additions to our knowledge have been extremely small. The first point that strikes one is that out of a total of 278 pages, all except 20 are devoted to the consideration of the flea, and beyond a casual reference or two not a single page is devoted to the consideration of the problems raised by the outbreak in Manchuria and the large additions to Plague literature that have resulted. These additions have recently been summed up by Galli-Valerio(1), as follows: "In the first place, it is interesting to note that although prior to the epidemic in Manchuria people hardly mentioned cases or epidemics of pulmonary plague since this epoch it is recorded everywhere. Thus we see it cited in India by Milne, in Formosa by Takaki, in Algeria by Lemane. At the same time as these observations have been made, the different observers insist more and more on the important rôle of man in the dissemination of plague, this rôle which the rat-flea theory exclusivists had almost suppressed in the epidemiology of the disease."

Plague Immunity.—The report opens with a short note by Rowland on the effect on immunization, of the medium in which the plague bacillus has been grown. As he admits, the result of his experiments was disquieting. For his conclusion is as follows: "Immunization with an antigen prepared from broth affords but little immunity against the same strain grown in serum." Now, the prophylactic mainly used is prepared from

broth, and the organism against which it is used has its habitat in serum, regardless of the proportionate part played in propagation by the flea, the rat, or by man. However, climatic and other conditions differ so enormously in Elstree and in India, that the conclusions of Elstree do not necessarily hold good for India. Good results were obtained by a living vaccine used in animals prepared by a preliminary injection of a chemical extract of plague nucleo protein, a modification of Strong's method. But the manifest objections to such a method are justly voiced as follows: "The whole subject of variation of bacteria has not yet been sufficiently studied to justify complete confidence, that a race which has become attenuated by long cultivation upon artificial media in a laboratory might not, by growth in the body, unexpectedly recover some of its lost virulence. In the face of such a possibility the question is not likely to be entertained by the authorities in India."

In the section on morphology there is nothing very new or striking. There is no reference to a peculiar property of the plague bacillus that has been not infrequently observed. This is the property that it is sometimes found to possess in the tissues of a naturally infected animal, of refusing to take up any of the ordinary stains, such as carbolic fuchsin or gentian violet, so that in a smear preparation blank spaces represent what ought to be the bacilli. The clue in such cases, in addition to cultures and general *post-mortem* appearance, is the very rare occurrence in such slides of a partially stained bacillus.

Mechanism of the transmission of plague by fleas.—This to the ordinary man is the section of the report that is by far the most vital and most interesting, but to the scientific critic, on account of one grave fault, it is the most disappointing. By a series of beautifully conceived experiments carried out with the most exquisite scientific technique (Bacot and Martin), it has been demonstrated that "given a flea in a certain pathological condition, the probability that it will convey infection (to the rat or mouse) is high." The pathological condition briefly is that the proventriculus or fore-belly of the flea gets blocked by plague culture, that blood can no longer pass into the stomach, with the result that when it sucks or attempts to suck—and in spite of its pathological condition it retains appetite and vitality—a little blood is sucked up into the proventriculus and regurgitates back, by now infected by the obstructing mass of plague bacilli, into the wound made by the pricker. Now who, considering percentage possibilities, will accept this as the common means of infection of man? Xenopsylla cheopis, the rat-flea of the East does not bite man readily, and untrained hardly at all, and he is rarely found on man. Swellengrebel(2) a supporter of the flea theory, on 56,790 persons in the plague-infected district of Malang in Java, found only 3 rat-fleas and on 1,829 persons in infected houses 7. What proportion of even

those were likely to be suffering from obstruction of the proventriculus? To this question, and here lies the great fault, the Advisory Committee give us no indication of an answer. The only observation bearing on the point is that in biting experiments carried out in Calcutta in 1907 with 100 X cheopis, a condition of inability to draw blood combined with repeated attempts to do so, was noted in one flea out of the hundred. One would have thought that the fate of the original flea-faeces theory of infection,—infected flea-faeces rubbed into the wound made by the prick-ers as brought forward by the Plague Commission—would have warned the Advisory Committee, for it has had to be supplanted by the blocked flea theory. Yet it was supported by experiments just as beautiful in conception, just as exquisite in technique, as those detailed in the present report. It is difficult to avoid repeating the criticism made at the time that the faeces theory was brought forward, that if ordinary percentage probabilities are taken into account then, as an explanation of plague in man, the blocked flea theory, like its predecessor the flea-faeces theory, is a *reductio ad absurdum*. The situation is not improved by the admitted fact that the bacilli from fleas' stomachs show little resistance to phagocytosis, and other signs of diminished virulence. "These observations, in conjunction with the lesser infectivity of the bacilli from the fleas' stomachs, lead us to conclude that by growth in the stomach of the insect a race of diminished virulence had bred out which had lost the (complete) resistance to phagocytosis possessed by the original blood strain."

Bionomics of the common rat-fleas, etc. —It takes a person of more courage and perseverance than myself to attempt to digest fully the extraordinarily laborious research of Bacot. It comprises roughly 106 pages of tables and what the compilation of even one page means can be judged from page 639. This page contains 306 observations on the laying and fertility of 742 eggs of *P. irritans*. There must be in all between twenty and thirty thousand observations recorded, and yet the fact must be admitted that the experiments result for the most part in a welter of contradictory conclusions. The aggregate result of two tables may seem to point in a definite direction, but if one starts to analyse the tables one finds them full of mutually destructive individual observations. The natural result is that the conclusions are, as a rule, so vague, guarded and conditioned, that it is almost impossible to quote from them. It is impossible to deal with this report properly without taking into account the previous report on flea breeding in Poona (*Plague Suppl Journ. Hyg Vol X*, pages 300-325), as there is so much divergence between the two. The main point of agreement is that in both it is established that a fair excess of humidity, about 75, affords the most favourable condition for every stage of development and that conditions of low humidity are distinctly unfavourable. Another and not

surprising fact has been established that *X. cheopis*, a tropical flea, does badly as regards its early stages in conditions of low temperature. On the other hand, it is rather disconcerting to find the unfed adult stage survives cold better than *P. irritans*. Eleven *X. cheopis* survived a temperature of 39.3°F for an average of 20 days, whereas four *P. irritans* survived only 16 days. So, again, 23 cocoons of *X. cheopis* at 39.3°F shewed a mortality of at least 96 per cent, but 18 cocoons of *P. irritans* had a mortality of 100 per cent (pp. 643-44 *op. cit.*)

The Poona figures are that adults of *X. Cheopis*, unfed, kept in an ice-box at a temperature of 60°F, have an average duration of life of 1.66 days against 1.17 at room temperature 70°F and .14 days in an incubator at about 101°F. Attention must be called to the results in the incubator portion of the experiment. Of 65 fleas experimented with in batches of 5 on different dates, 45 are shown with a duration of life *ml*. One would have thought that the only deduction from such an experiment was that an incubator is a peculiarly unhealthy place of residence for a flea, but we find it gravely stated "the average length of life of the flea (at room temperature) was considerably longer than in the warm temperature 98-104°F" (page 320).

Lack of correlation between flea prevalence and breeding experiments in Poona. —Roughly, there is very little development of fleas in the hot dry months of March, April and May, and so one would expect a shortage of fleas in June, July and August, but there is the reverse. Again, though there is a reduction in the months of April, May and June of the number of fleas found on rats, the reduction is never sufficient to account for the reduction in plague. The flea figures per rat for these months are 2.9, 2.4 and 2.4, a reduction to about 50 per cent of the average, whereas plague in man in these months is reduced to 9 per cent of the average. Again, how can one deal seriously with arguments such as the following. "In April, on the other hand, the humidity being 37 per cent with a temperature of 84°F 100 fleas yielded only 88 eggs and these only 1.5 larvae, assuming that 1 per cent of these developed, we get 0.015 fleas with an average life of 0.8 days, giving a total life of 17 minutes or 1/4000 of the July figure" (p. 323.) The next sentence begins "These figures cannot of course be transferred to the breeding of fleas under natural conditions." It is difficult indeed to conceive of 0.015 of a flea breeding under natural conditions!

Duration of life is many times longer in England than in India. —I have tried to express this in a comparative table in which it will be seen that the few figures available for Calcutta agree roughly with the Poona figures. The figures in the table must not be taken too literally, particularly the average duration of the cocoon stage at Loughton, as the average variation is extreme, from 9 to 76 days, and experiments under extreme conditions

cannot be taken into account. Bacot sums up the maximum duration of the different stages of development of *X. Cheopis* as follows : egg stage 10, larval 84, cocoon 182, adult unfed 38, fed 100 "There is no difficulty in accounting for active adults being found in favourable situations where there have been no hosts for considerable periods. We may safely estimate for *C. fasciatus* 22 months, *P. irritans* 19 months, *X. Cheopis* 10 months, *Ct. canis* 18 months, *C. gallinæ* 12 months." The average duration of the different stages of *X. Cheopis* in favourable conditions are, roughly egg 10 days (?), larva 50 days, cocoon 25 days, adult fed 38 days, in all 124 days. One is justified in drawing one conclusion from these English figures that, given consideration of the duration and great variability of these life-history figures, the rat-flea breeding season becomes an extremely indefinite period, almost as indefinite as the rat breeding season has proved to be. This conclusion is supported by the facts as to flea prevalence in

months the period of survival was only 118 (Table XIV). In a dark room it was 31, 48 if kept moist and 13 if kept dry. In Calcutta the average duration of life has been roughly the same as in Poona, with 10 days as the ordinary limit of survival—whether fed or unfed. 16 days was noted once in a fed flea kept singly in a tube on moist sand.

The final conclusion one must come to is that there is no reason why volumes such as the present under review should not be produced in infinite series, but until the basis of work is somewhat altered they will add little to our knowledge of plague in India.

W. C. HOSSACK.

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Les Nouvelles observations sur la transmission de la peste bubonique à l'homme par les puces des rats, 1914

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Comparative table of average duration in days of the stages of development of X. Cheopis under English conditions at Loughton, and Indian conditions at Poona

	Egg	Larva	Cocoon	ADULT.	
				Unfed	Fed
Loughton	* 10 (?)	50	25	83 (in incubator) 28** (room conditions) 25 (rough estimate)	38 (100 maximum) 5 (16 maximum)
Poona	6 (roughly)	19			
Calcutta	2 (minimum)				

* The only figure available and given as a maximum

** Table XIX shews that in Poona newly hatched fleas unfed survive 72 days as against an average of 26 days for fully grown fleas unfed.

Poona at various seasons of the year. There are always sufficient present to convey plague and the dying down of plague does not depend upon the absence of fleas.

If these figures are compared for a moment with the Poona figures the divergence is immense, and shows that deductions from English experiments can be applied to Indian conditions only in the most guarded way.

The Poona figures for the egg stage are about 5 days, lengthened out to about 7 days for the coldest months of the year, with extremes of 16 days (11% of particular batch) and 4 days (28.6% of particular batch). In Calcutta, the extreme minimum limit observed in hatching has been on the morning of the 31st day, i.e., 2 days. As regards the duration of the larval stage in Poona, it is on the average 19 days under normal conditions, and 26.2 days under artificially moist conditions. The adult flea unfed in glass tubes survives only 2.8 days (Table XIII). In the dry

II.

THE REPORT OF THE SURGEON-GENERAL, AMERICAN ARMY, 1913

THIS report is always one of considerable interest and in itself is the model of a full and complete report on all that concerns the health of the Army of the United States. This report is submitted by the late Surgeon-General Geo H. Toney. We make the following extracts.—

COMPARISON WITH FOREIGN ARMIES

"An effort is made in Chart Land Tables (*not here reproduced*) to make a comparison of the data available in the annexes to the annual reports of the medical departments of the armies of a number of foreign Governments. There are, however, so many factors which are peculiar to each country that an accurate comparison is impossible. For example, in most foreign services many of the minor ailments, which in the United States Army are treated in quarters and recorded with the same accuracy and care as in hospital cases, are not made a record in the medical reports,

"Table No. 77 shows that the admission rate for the United States for all causes was 739.70. This compares with the foreign armies as follows —

Higher	
French	1,982.00
Dutch	1,280.00
Spanish	1,017.30
Japanese	856.30
Austro Hungarian	829.20
British	802.77
Portuguese	782.00
Lower	
Prussian	576.50
Bavarian	444.10
Russian	142.00

"It will thus be seen that the admission rate for the Army in the United States was lower than any except that for the Russian, Bavarian, and Prussian. The constant non-effective rate for the Army in the United States was 27.15 per 1,000. This compares with foreign armies as follows: French, 32.58; Spanish, 31.56; Japanese, 30.97; British, 27.16; Portuguese, 26.36; Dutch, 24.95; Prussian, 24.34; Bavarian, 21.94. The United States Army, therefore, had a lower non-effective rate than the other countries with which the comparison was made, except the Bavarian, Prussian, Dutch, and Portuguese.

"Special attention is invited to chart P showing the admissions and death rates for enlisted men only for the United States. This chart shows graphically the remarkable decrease in both rates as the result of the use of the typhoid prophylactic. This immunization was begun, but was voluntary, in 1909, and was made compulsory for the entire Army late in 1911. (See the annual report of this office for 1912, pp. 52 *et seq.*, for the various steps from voluntary to compulsory prophylaxis.) Chart R is a graphic portrayal of the admission rates for malarial fevers, undetermined fevers, and typhoid fever for the United States. This chart shows that there has been a steady reduction in the rates for malaria and undetermined fevers, as the result of sanitary measures, but not so marked as the decrease in the rate of typhoid fever, the result of improved sanitation and typhoid prophylaxis. It must be especially emphasized that there has been no lessening of the efforts in the Army to prevent, by improved sanitary measures, the occurrence of typhoid infection. Advances in the other sanitary measures have gone on, hand in hand, with the extension of the typhoid prophylaxis. It is believed that the typhoid prophylaxis is as potent a preventive against typhoid as vaccination is against small-pox. Vaccination is certainly a reliable measure for the prevention of small-pox, and yet few would advocate the abolition of other needful sanitary measures. From chart R it is also apparent that typhoid fever in the Army is not being incorrectly diagnosed and placed under the head of other fevers.

"It has now been clearly demonstrated that the immunization against typhoid fever by the use of typhoid prophylactic is a thoroughly practical measure for the prevention of this disease, that it is unattended by bad results, and that its protective value is very probably equal to that afforded against small-pox by vaccination.

"It was stated in the 1912 report that since the beginning of the year 1912 each case as it is reported has been carefully investigated. Surgeons are required to furnish a complete history of every case, giving in detail the methods used in arriving at the diagnosis. This office insists that in each case, if possible, the diagnosis be confirmed by a blood culture or by a culture from the feces or urine. Since the Widal reaction occurs in practically all persons who have received the prophylactic and persists in the blood for some time thereafter, it cannot be considered as positive evidence of the presence of typhoid fever in an immunized person. It is recognized that it is not possible in every case of typhoid fever to confirm the diagnosis by cultures and it is not the practice of this office to refuse

to accept such a diagnosis when the clinical findings are clear. It is believed, however, that in practically all the cases of typhoid fever it should be possible to isolate the organisms either from the blood or from the urine or feces at some time during the course of the disease. Every case reported is carefully followed up. In two instances in 1912 the surgeons were advised to report cases as typhoid when the laboratory reports were negative, and when they were inclined to report the disease under another head. In only one instance was it necessary to advise the surgeon to change a diagnosis from typhoid to something else. In this case all the evidence was against the case being typhoid.

The results of this campaign bid fair to be even more brilliant in 1913 than in 1912. During the first six months of 1913, so far as can be determined from the information on hand at this date (August 1), not a single case has occurred in the Army stationed in the United States, Hawaii, Porto Rico, Panama, Alaska or Philippine Islands. The last admission for this disease in an enlisted man was October 27, 1912. During the same period in 1912 in the United States there were 8 cases with 1 death, and in 1911 24 cases with 5 deaths.

Re-immunizations with the typhoid prophylactic are now carried out upon re-enlistment in the same way as re-vaccination against small-pox. The duration of the immunity is not yet known, but it is improbable that it is longer than that conferred by vaccination against small-pox, and therefore re-immunization at the beginning of each enlistment period is believed to be necessary.

It is again recommended that when it may become necessary to mobilize either the militia or volunteer troops in the field that this measure be made compulsory for them. As was stated in the last report of this office, in case this is done, it is believed that it will be impossible in future for large epidemics of typhoid fever to occur in the United States Army. An occasional case will develop, but typhoid fever will cease to be a scourge to the Army in the future as it was in the past, and will disappear even as small-pox has practically disappeared in armies as the result of vaccination. Among the sanitary achievements of the Medical Department in preventive medicine since the time of the Spanish-American War, this sanitary measure for the prevention of typhoid fever should rank second in importance only to the discovery of the method of transmission of yellow fever.

VENereal Diseases

Four years ago, compelled by the fact that the venereal diseases were the only infectious diseases which showed no tendency to diminish and had become the greatest source of disability, this office began to urge the application to them of the principles of preventive medicine. The campaign was first taken up through the chief surgeons and post surgeons, suggesting that they enlist the interest and co-operation of commanding officers, and also suggesting the lines along which their activities should be directed, which were in general terms: (1) The encouragement of wholesome recreations at military posts which would keep soldiers from seeking amusement at vile resorts; (2) the instruction of the men by lectures and personal advice whenever opportunity offered as to the nature of venereal diseases, the extent of their prevalence among prostitutes, and the grave dangers caused by them, not only to the men infected but to their families; (3) the importance of early detection of cases of venereal diseases by periodical physical examinations of the men, and the importance of keeping cases under continuous observation and treatment until cured; (4) finally, approved measures of personal prophylaxis were suggested for those who would, contrary to advice, expose themselves to venereal infection. The widest latitude was given the medical officers as to the method of prophylaxis which should be employed, the importance of personal cleanliness was emphasized, and such medicinal preparations

as were desired for personal disinfection after exposure were freely furnished

EFFECTS OF TROPICAL SERVICE

In reply to a letter from the commanding general of the Department of the Philippines, March 15, 1912, asking for the opinion of the Board in regard to the effects of continued tropical service, and relative to the character of residence best suited to conserve the health of the occupant, the Board stated—

1 The effects of a tropical climate, if harmful, are probably cumulative to a certain extent, i.e., increase with length of exposure

2 Aron (Phil Journ of Science, April, 1911) has shown that tropical sunlight is harmful by virtue of its heat rays, monkeys and rabbits, for instance, being killed by exposure to sun for an hour or two, even in December and January, but being protected from harm by either shade or an electric fan or breeze to promote heat dissipation

3 Aron and many others show, in fact there is practical unanimity in the opinion, that humidity greatly increases and aggravates the harmful effects of heat by decreasing evaporation

4 The climate of the Philippines is both hot and humid and is considered by most Americans a cause of discomfort

5 Hot and muggy weather in the United States and most parts of the world is recognized as a proper justification for lessening or stopping work—witness the general closing of schools in summer, the general taking of vacations then, the earlier closing of stores, etc.

6 It is there and elsewhere a matter of common observation that "heat waves" do increasing harm as they last longer than they are tolerable if a breeze comes up daily (as at the seashore) or if the nights are cool. Mortality rates increase progressively during such periods of excessive heat.

7. It is a matter of official recognition that Government employees need to get away from the heat of Manila each year, hence the removal to Baguio

8 It is likewise commonly recognized that many women and children become so run down and debilitated as to need to go to Japan, Baguio, or the United States

9 It is often true that monotony and discomfort are the causes of nervous and mental breakdown—witness the often mentioned insanity among farmers' wives and the nervous breakdowns attributable to pain and strain, even though it be as in many cases of eyestrain, so slight as not to be recognized by the patient

The Board concludes that—

It becomes apparent that an endeavour should be made to provide quarters as cool as possible. The health of officers and men will undoubtedly suffer if they are compelled to live in hot quarters

The ideal of the majority of tropical sanitarians with regard to housing is a detached house of the bungalow type, having wide verandas, and with all the rooms communicating with the outside. Giles says "The second great desideratum of a tropical house is free ventilation, to secure which at least one, and preferably two, sides of each room should be in free communication with the outer air by means of doors or windows and some of these extend to the floor level or near it."

This arrangement secures protection from the heat and the best possible ventilation, and it is evident that it is desirable to approach this ideal as closely as possible, while types of construction in which part of the rooms will be hot and ill ventilated should be condemned. In quarters so constructed the resultant discomfort and injury will vary with the increased heat. A man can remain in the Tropics indefinitely without being actually sick if infectious diseases are avoided.

This is fast leading to the fallacy that we can advantageously remain many years in these latitudes. The fact that while a man may never be sick, he yet may have his physical and mental vigour greatly impaired by prolonged exposure to heat is thus lost sight of.

No man can do his best work, either physical or mental, if he is hot and uncomfortable. The same feeling of lassitude and indisposition to exertion is experienced at home during the hot summer, which after a few years becomes chronic.

If troops are to remain in this climate, it will be desirable that they should live under the most favorable circumstances, and especially that they should have cool quarters. It is believed to be a fact that if the Army is hot and uncomfortable in the Tropics, the end results may be inferior even from a financial standpoint. Sick leave and ordinary leave will increase and general efficiency will be impaired.

ANNUAL REPORTS

SANITARY REPORTS, BIHAR & ORISSA

LIEUTENANT-COLONEL HARE, I.M.S., the Sanitary Commissioner, Bihar and Orissa, has continued the Eastern Bengal practice of publishing useful papers and reports as a supplement to his Annual Report. These papers are usually well worth publishing, but we think it would be better to publish them in, say, this Journal when new, than to allow them to appear in a belated Supplement to an Annual Report.

The present Supplement contains three useful reports

That by Major T. H. Delany, F.R.C.S.I., on fumigation with burning *nim* leaves as a plague disinfectant is eminently practical and might well have been announced a couple of years ago.

"Finding I was frequently asked by Europeans and Indians alike in this District (Saran) for a simple house disinfectant, I began a series of experiments in January 1912 with substances that would be likely to kill off rats in plague infected houses. I sought a substance that could be so applied that it would search out all lurking places of rats and kill them. The method of fumigation suggested itself to me at once. I experimented in my servants' godowns as follows: Rats in traps were suspended from the roof, placed on the ground, under bundles of clothes, etc., in a godown. Thirty to fifty cow dung cakes or *chapatties* (easily obtained of course in every village) were arranged in a loose circle in the centre of the cleared floor of a hut and set on fire, with or without the aid of a little kerosine oil. The various substances to be experimented with were piled on the burning cow dung *chapatties* when well alight, the doors and windows were shut, and the fire was allowed to burn itself out. In this way rats were subjected to the fumes of innumerable burning substances in turn, but although a number of experiments were performed, the rats (though occasionally shewing signs of distress) survived as a general rule.

In the course of examining some rats after the experiments I noticed some dead fleas on some that had been fumigated with *nim* leaves. I repeated the experiments with *nim* leaves, but surrounded the rat traps, except on top, with muslin. I then found that in practically every case the rats were found to be free from fleas, but the muslin under the traps contained a number of dead fleas. Some further experiments shewed that the longer the rats were exposed to the *nim* fumes the greater the number of dead fleas that were found. The best results were obtained by an exposure of over two hours, and up to three hours.

I now experimented with a large number of other substances, but failed to discover any better pulicide than the fumes of fresh *nim* leaves.

I tried in turn naphthalin, native tobacco (*kaini*) *piperithum* leaves, sulphur, incense, as well as the leaves

of the castor oil plant, the banyan tree, bamboo, various grasses, sunish, pulses, pipul, oleander, and many others, burnt with a fire made of cowdung *chapatties*, but none of the substances tested acted as pulicides, nor did any of these substances burnt with *nim* leaves, give as good a result as *nim* leaves alone.

I have also endeavoured by various experiments to improve the method of fumigation by *nim* leaves, but failed. I am not satisfied that *nim* leaf fumigation will kill all the fleas on every rat, a few fleas do occasionally survive at times. This may be due to imperfections in the method of carrying out the experiments, either the muslin had been wrapped too much around the trap, and so protected the rat to some extent from the fumes, or the fire had gone out too soon, or the fleas at times may be better able to obtain protection in the fur of some rats, than in that of others. It seems more than likely, however, that fleas that had dropped off the bodies of dead plague rats (*i.e.*, real plague fleas or plague infected fleas), would be killed with greater ease in exposed positions on floors, and on walls, than they are when buried in the furry coat of the rat."

CAPTAIN L COOK, FRCGS IWS, has a long report on plague in Bibai, Saran and Champaran Districts, from which we make the following extracts —

The report is somewhat diffuse and badly wants a summary, so it is not easy to make satisfactory extracts from it —

"But the infection must have been carried by human beings fleeing from the infected places in the south of the district and also probably by cases from the adjoining districts of Ballia and Gorakhpur.

By no stretch of the imagination can it be put forward as a theory that this rapid spread throughout the district was due to the migration of rats, otherwise the occurrences of rats fleeing from village to village must have been very common and witnessed by many people, but I have never been able to obtain any authentic evidence of these migrations ever having been witnessed.

In addition, the *Mus Rattus* has so many natural enemies directly it leaves the refuge of the thick mud walled villages or the crowded houses in towns that it is not likely to court certain disaster by going on long hazardous journeys across fields.

As to whether the infection can be carried by grain is a moot point, but if it is, it is a small factor in the spread of the disease. Plague is at its worst in the Saran district during the months of January, February and March, whereas the traffic in grain, both imported and exported, takes place chiefly in the months of April, May and June when plague is subsiding. The imports of grain into Saran chiefly come from Darbhanga, Muzaffarpur and Bhagalpur districts, less affected than Saran itself."

Rats infest thick mud-walled huts which are admirably adapted for their burrows hence Capt Cook writes —

"The lesson to be learned therefore from the above facts and figures is that the building of mud huts or *kutchha pucca* buildings constitutes a grave danger to a community, by reason that they afford a suitable harbourage for rats, and, given time, the latter will accumulate to such numbers that once plague commences amongst them as an epizootic, the outbreak of plague amongst humans will be a result.

That the erection of these mud huts in villages can be prevented is at present impossible, but in municipalities where one presumes building regulations are in force, it should be made a criminal offence to erect a mud hut, and if the people who propose to erect a house can not afford to build a *pucca* house, they should be compelled to erect only a wattle hut and *keep* this with a thin layer of mud to prevent fire.

Yet the building of these mud huts continues day by day in municipalities and this with the cognizance of the Municipal authorities who are powerless to prevent it. And these huts are built one on the top of the other so that the congestion of the population becomes extreme, and if nature steps in eventually and thins out the population by a merciless plague epidemic, no one can be very much surprised.

In these days lakhs of rupees are spent on the construction of *pucca* drains in large municipalities and another aspect of this sanitary question is whether it would not be better to utilise some of this money in acquiring houses in congested parts, razing them to the ground and so gradually open up the town, at the same time suitable building regulations should be made and means taken to enforce them."

The last report is one of cholera at Puri at and after the Car Festival of July 1912. It is by Dr. N Ilay Pulipaka, the Civil Surgeon, and shows very clearly and in an instructive way the great danger from the diffusion of cholera by returning pilgrims, carriers and contact cases.

Correspondence.

THE BOMBAY PLAGUE LABORATORY A CORRECTION

To the Editor of "THE INDIAN MEDICAL GAZETTE"

SIR,—In the article published in your issue of this month on "The Bombay Tropical School Scheme" there occurs the following passage referring to the Bombay Laboratory,

'For a long time this institution was more than busy with the manufacture of anti plague vaccine or Haffkine's prophylactic. In 1901 further advance was proposed—a Central Research Laboratory—but the unfortunate Mulkowal disaster (to which we need not further refer) had a necessary depressing effect and the Institute was kept busy by administrative changes, and improvement in methods so as to render the recurrence of such a tragedy as the Mulkowal case an impossibility.'

These lines suggest that the Mulkowal accident had its origin in the institution in question.

Will you allow me to mention, as, I think, I have done once on a former occasion, that at first it was indeed believed that the matter stood as suggested in the above passage. When, however, the materials of the investigation were published, the professors of pathology and bacteriology at the Universities of Cambridge, Edinburgh, Manchester, Leeds, Liverpool, King's College, St Bartholomew's Hospital Medical School, the Royal Institute of Public Health, in London and the Rockefeller Institute of Medical Research in New York (*i.e.*, Professors G Sims Woodhead, Ch Hunter Stewart, Sheridan Delapino, R F C Leith, Sir Ronald Ross, A F C Tanner Hewlett, W J R Simpson, E Klein, W R Smith and Simon Flexner), submitted to the Secretary of State for India and published a joint statement to the effect that the case did not offer ground for the above conclusion, and that the facts disclosed at the enquiry and in the subsequent laboratory experiments indicated that the origin of the accident had not been connected with the operations at the Laboratory. (See *The Times* of 29th July and 29th August, 1907.)

United Service Club,

Yours faithfully,

Calcutta, 22nd May, 1914

W M HAFFKINE

[We are very glad to publish Dr Haffkine's letter. The brief summary given above might mislead those unacquainted with the whole case, therefore the importance of the last para of Dr Haffkine's letter above—Ed., *IMG*.]

VACCINATION AND RE-VACCINATION

To the Editor of "THE INDIAN MEDICAL GAZETTE"

SIR,—The following is a copy of a letter addressed by me to the Superintendent of Vaccination, Darjeeling. With reference to your letter No. 1705, dated 26th March 1913, asking me to explain the reason of high percentage of successes in re-vaccinations, I beg most respectfully to submit the following —

There had been a fearful outbreak of small pox in this town during the year 1900 and 1901, and I was entrusted with

the vaccination work of the town. Since then I am doing so, besides being in charge of the Small Pox Hospital where about 14,165 primary and 37,195 re vaccinations were performed under me and I had an opportunity of closely observing the vaccination and its effect to prevent small pox, and I have come to the following conclusions and confirmed it by making an extra column in the vaccination register for entering the time of previous vaccination, inoculation or having had small pox, as the enclosed statement will show.

From the past experience it has been found, and it has also been proved, that the protective power of successful vaccination in 6 points lasts for 5 years as a general rule. But, if it is in one or two points the protective power lasts only for one or two years and the power of Nepal inoculation lasts about 10 years, whereas protection from natural small pox lasts for 20 to 30 years or more. Thus it will be seen that if anybody is vaccinated in one point, or out of 6 points vaccination only one point is successful, and after that he is vaccinated again one or two years later in 6 points with good lymph, the result will be successful in 6 points, but on the other hand, if anyone is successfully vaccinated in 6 points and re vaccinated again one or two years after, it will never be successful, unless the man is specially susceptible of getting small pox, which is very rare, but, on the other hand, if he is re vaccinated 6 or 7 years later, the result will be successful as a general rule (but there may be some exceptional cases), *vide* column of enclosed statement marked A in red ink. Thus re vaccination on Nepal inoculation cases after 10 or 12 years show successful result.

We generally re-vaccinate 5 years after the previous vaccination and therefore the result is successful in high percentage, and if circumstances compel us to re-vaccinate within five years the result is unsuccessful unless previous vaccination had been in one or two points only, in which case the result will be contrary.

If in a month only two re-vaccinations were performed 6 or 7 years after the primary vaccination in 6 points or two years after, in one or two points primary vaccination, the result will be successful that is 100%, *vide* column of enclosed statement marked C in red ink, but in average for 9 month's work it will not be so high and, in fact, as our current year's work show, that it has come to 62%, *vide* figures of enclosed statement marked D. Again, if statistics are taken from the figures for the period of outbreak of small pox when re-vaccination was performed from one side to another without consideration of time of previous vaccination, the figure or percentage of re-vaccination will depend on the nature of the previous protection of the localities. If these points are carefully observed it will be seen that there is nothing unusual or extraordinary in the current returns of the town vaccination.

There are some exceptional cases where this general rule is not applicable. I saw a woman who had an attack of small pox during the outbreak of 1901 and was treated in the Temporary Small Pox Hospital at Laundry and was cured. But the very woman had another attack of small pox during the outbreak of 1906 and died in the Small Pox Hospital, Darjeeling.

Another fact I beg to bring to your kind notice is that the outbreak of small pox in Darjeeling town took place 5 years after, i.e., 1901 and 1906, because we never vaccinated anybody in less than 6 points unless a very small baby, as provided in the Circular No. 28, dated 25th March 1905, a copy of which is enclosed herewith *vide* annexure E. The reason of having no outbreak in 1912 is that we knew the fact and were careful, whereas in Calcutta people are generally vaccinated in one or two points I presume this is probably the cause of outbreak of small pox in Calcutta almost in every 2 or 3 years.

I have the honour to be,

etc.,

(Sd) NIBARAN CHANDRA SEN,
RAI BAHADUR,

Medical Officer in Charge, Town Vaccination, Darjeeling

SUB CONJUNCTIVAL ECCHYMOSIS DUE TO WHOOPING COUGH

To the Editor of "THE INDIAN MEDICAL GAZETTE"

SIR,—Would you kindly find a little space in your journal to publish the following case of severe sub conjunctival ecchymosis due to "Whooping Cough." It may interest some of your readers at least, as this complication does not often arise.

The other day while I was sitting in my dispensary, a girl, aged about 5 years, was brought to me for treatment of her eyes, which were terribly red and swelled up as if shooting out from the eye pit, the eyelids were dark blue she complained of no pain and discomfort. Many eye drops were tried by the quacks and other private practitioners,

but obviously to no effect. History from her mother states that she had been suffering only from a peculiar fit of cough—generally during night and early hours of the morning with but little expectoration occasionally tinged with blood. But since last 3 days her eyes began to be red and was increasing till reached the present stage. On auscultation, only a few stridor honchi were found here and there, otherwise her chest and all other organs were perfectly sound. She sometimes gets a little high temperature during night. She had a fit of coughing before me and evidently it was "Whooping Cough." On further enquiry it was made out that there are many children of the same village, suffering from the identical fit of cough, but without any complication, out of which 4 died.

As it is an outdoor dispensary I compelled them to live somewhere near the dispensary for my observation. On the 8th day, her cough nearly gone and the ecchymosis nearly disappeared and she was perfectly cured on the 12th day. She is now a jolly little girl as before. I send a brief detail of my method of treatment—

Internally—Belladonna and bromides

Externally—Piotargol, cocaine and boric acid lotion

The eyes protected by eye preserver

I had to stop belladonna after two days, as the pupils were much dilated. During my small service of 8 years I have never come across a case of Whooping Cough with such severe complication.

DATED SHELLA,

Khasi Hills

Yours, etc.,
J C MITER,
S A Surgeon

LIVE FISH ACTING AS A FOREIGN BODY IN THE THROAT

To the Editor of "THE INDIAN MEDICAL GAZETTE"

DEAR SIR,—I shall be very much obliged if you will kindly publish the following in the Indian Medical Gazette—

A Madras cooly boy, aged 14, was brought into the hospital on 28th January 1914 from a village about 3 miles from Pyapon with a history that a live mud fish ("Climbing Perch") accidentally got into and was lodged inside the throat. It happened that the boy went out fishing, caught several of these live fish which he put into a small earthen pot. To prevent these from jumping out of it, he caught hold of one of them and tried to grind it to death between his teeth. No sooner he opened his mouth, the fish in his hand escaped, dashed forwards and lodged itself inside the throat with his head downwards, there being no chance of its coming out on account of the spikes piercing the throat wall. The patient arrived at the hospital about 4 hours after the accident, with a very anxious look and in great agony and pain. There was a flow of saliva mixed with blood trickling down from the mouth. On examination into the throat, it was found that the tail of the fish about an inch in length was the only part visible—the head and body being well down in the upper end of the oesophagus.

The throat having been sprayed with local anaesthesia, a pair of tongue forceps was applied to the tail as much as they could possibly catch. Having introduced my forceps into it, I cut away few spikes with a pair of curved scissors guided by the finger, but not sufficiently to relieve the fish entirely. A gentle thrust of my finger as well as that of my assistant on either side, well close upon the spikes however, entirely relieved the entanglement, so that the traction through the forceps presented no difficulty and the dead fish was removed *in situ*. There was slight laceration for which Pot Permang Solution was given to gaigle, and the patient discharged from the hospital on the 4th February completely relieved.

Nature of fish.—It was mud fish of *Anabas Scindens* (?)—commonly called among the Burmese "Ngabyem" English name—Climbing Perch, Bengali and Hindustani name—Koi, Madras name—Penair Kundai.

It was 4½ inches long, 1¾ inches broad and measured 4½ inches in circumference at its thickest part of the body. The remarkable feature of this kind of fish is the presence of long and prominent spikes on both its dorsal and ventral sides.

Although accidents of this kind are extremely rare and unusual, I have been informed that a similar case was brought into a neighbouring hospital in 1904, where the patient unfortunately succumbed as the fish could not successfully be extracted.

Yours, etc.,

SHWE GE,

Offg Civil Surgeon, Pyapon, Burma

THERAPEUTIC NOTICES AND LITERARY NOTES

MESSRS BUTTERWORTH & CO, (India), Limited, Calcutta announce publication of a new book on PAIN, its origin, perception and significance, by R J Behan, M.D., of Pittsburgh. The volume runs to 920 and has 191 illustrations. Every pain known is described, analysed and classified for use of general practitioners. Price, Rs 18 12.

The Hoffmann La Roche Chemical Works, Limited (7, Idol Lane, London, E.O.), send us a pamphlet giving the technique of hypodermic and intravenous injections, now much in vogue in many methods of treatment. This firm's DIGALFEN and OMNOPOIN are used hypodermically to give reliable digitalis and opium effects, respectively.

DR Douglas Dawson of the Australasian Antarctic expedition has testified to the extreme use and value of B & W's Tabloid medical equipment. The drugs were in no way impaired by the extremes of climate.

B & W's PAMPHLET on *The age of Risk* is quite interesting, it gives notes of first aid and the various "Tabloid" dressings and first aid boxes for travelling by land or sea, or air.

THOSE interested in steam disinfectors and the use of steam as a disinfecting agent may be confidently referred to the GRAMPIAN ENGINEERING AND MOTOR, CO Limited.

STRILING, SCOTLAND—This firm's new high pressure disinfecter was exhibited at the Bombay Medical Congress, 1910, and got a certificate of merit. There are 4 standard patterns large, small and portable. Many medical officers of health have certified to the value of the apparatus of this firm.

PUNJAB NOTES

FROM an official report recently published showing the results of measures adopted for the destruction of wild animals and venomous snakes, it appears that 899 persons died of snake bite in the Punjab during 1913. As usual, the Gujranwala district heads the list with 170 deaths and the Government review remarks in this connexion that "the consistently high figures of mortality in this district require examination, and a report will be called for from the local officers."

Presuming the figures is approximately accurate, it becomes a matter of interest to identify the species of snake chiefly responsible for this mortality. Unfortunately it is rarely possible to do this, since the snake is either not produced for examination or it has been damaged to such an extent as to render identification a matter of difficulty.

Judging however from the physiographical features of the Gujranwala district, it seems probable that in this district the phooresa (*Echis carinata*) is the commonest poisonous snake, but whether this is actually the case and whether the mortality is due to bites inflicted by this viper, must remain for the present a matter of uncertainty.

The *Echis*, however, is extremely common in many parts of the Punjab, their skins may not uncommonly be picked up in the vicinity of Lahore and the writer has killed two specimens within a week on the Lahore golf links. In these circumstances the recent work of Acton and Knowles, published in the January number of the *Journal of Indian Medical Research* becomes a matter of practical importance, as well as of scientific interest. These authors show that the venom of *Echis carinata* possesses only a low potency and that the chances of recovery after being bitten by a snake of this species with full glands is in nature probably more than 40 per cent. They therefore conclude that an anti-venom of even low potency will almost entirely eliminate the mortality due to this viper. An *Echis* anti-venom is not at present available, but it is understood that this question forms the subject of experiments now proceeding at the Bombay Bacteriological Laboratory. In the meantime it may be hoped that reliable statistics regarding the mortality produced by this snake will be collected, for there seems reasonable grounds for the belief that the use of an *Echis* anti-venom in the case of snake bite in an *Echis* infested district, will be attended by success in a considerable proportion of instances.

Service Notes

THE FOLLOWING NEW DEPARTURE WILL BE WELCOMED—
"EXTRACT, paragraph 35, of a Military Despatch from the Most Hon'ble the Secretary of State for India No 41, dated the 17th April 1914 Received the 3rd May 1914

"I approve the proposal made in paragraph 13 of your Army Department Despatch No 10, dated 12th February 1914, that newly appointed officers of the Indian Medical Service should, on first arrival in India, be attached to Presidency Hospitals for two months for clinical instruction in tropical diseases, and the necessary instructions will be issued to officers appointed to the Indian Medical Service in futuro."

WITH much regret we record the death at Darjeeling on 10th June of Capt J Hay Burgess, M.D., F.R.C.S., I.M.S., Surgeon to His Excellency the Governor of Bengal. Capt Burgess had been ill for over two months, but continued to work up to his last few days, an operation was performed, no obstruction was found, but a paralysis of the colon and stomach, due to an acute pancreatitis.

He was buried with full military honours on 11th June 1914. Capt Burgess was educated at St Mary's Hospital, London, where he held several resident appointments. He took the M.R.C.S. in 1902, M.B. (Lond.) and F.R.C.S., 1905, took second place on entrance to the I.M.S., in 1903.

He joined Lord Carmichael's staff in 1912. He was an able and accomplished surgeon and seemed to have a fine career before him. His cheery presence and kindly disposition were appreciated by all who knew him. *Multis illis bonis stabitis occidit!*

THE Government of India has decided upon amalgamating the lists of medical officers in civil employ in the Presidency of Bengal with those in Assam, and the following list presents the considered conclusions of the Governor General in Council and no representations will be accepted from individual officers who may feel themselves aggrieved by the arrangement.

List of officers of the Indian Medical Service according to seniority in permanent civil employ in Bengal and Assam.—

1	Lieutenant Colonel	A R S Anderson
2	"	G R M Green
3	"	A H Nott
4	"	J T Calvert
5	"	F P Maynard
6	"	F O'Kinealy
7	Major	E C MacLeod
8	Lieutenant Colonel	H B Deare
9	"	R Bird
10	Major	A T Gage
11	Lieutenant Colonel	G R Stevens
12	"	L Rodgers
13	"	E A W Hall
14	"	H S Wood
15	Major	E Gwyther
16	Lieutenant Colonel	E A R Newman
17	Major	E E Waters
18	"	A Leveton
19	"	W W Clemesha
20	"	C A Lane
21	"	W D Ritchie
22	"	J W F Raitt
23	"	J O H Leicester
24	"	H Innes
25	"	R P Wilson
26	"	D McCay
27	"	F N Windsor
28	"	A C MacGilchrist
29	Captain	C A Gourlay
30	"	J W McCoy
31	"	L B Scott
32	Major	H A F Gidney
33	"	E O Thurston
34	"	W V Coppinge
35	Captain	D P Goil
36	Major	J B Christian
37	Captain	T C MacC Young
38	"	O R O'Brien
39	Major	A B Fiji
40	Captain	A S M Peebles
41	"	A M Jukes*

THE following extract is taken from the article in the Times (1st May 1914) by Sir Malcolm Morris, K.C.V.O. The whole article should be read—

"The critical phase through which the Indian Medical Service is passing has aroused in medical circles an interest not entirely free from anxiety. The sympathy and pride with which, during the whole of a long professional career, I have followed the fortunes of the service have been quickened by the opportunities I enjoyed, during a recent tour in India, of seeing for myself the splendid work it is doing. No one could visit, as I had the privilege of visiting, the

* Excluding officers of the Jail Department in Bengal

hospitals and laboratories in Bombay, Calcutta, Lucknow, Delhi, Agra, and other centres, without being moved to glowing admiration of the benefits which it is conferring upon India, not merely by the fulfilment of its many-sided routine duties, but also by the researches which it is energetically prosecuting in the domain of tropical medicine. That the grievances under which the Service is chafing are not mere figment is, in my opinion, beyond controversy. In them is to be found, in part at least, the explanation of the dearth of candidates which is occasioning no little concern."

LIEUTENANT COLONEL JAMES REID, Bengal Medical Service, retired, died in a nursing home at Glasgow on 25th April 1914. He was born on 26th July 1844, educated at Glasgow University, where he took the degrees of M.B., C.M. in 1868, and entered the I.M.S. as Assistant Surgeon on 1st April 1870, becoming Surgeon on 1st July 1873, and Surgeon Major on 1st April 1892, and retiring on 7th April 1894. He was for some years Principal Medical Officer of the Andaman Islands, and in April 1884 was appointed Medical Storekeeper, Calcutta, holding that post for ten years until he retired. In September 1900 he succeeded the late Lieutenant Colonel C.J.H. Warden as Examiner of Medical Stores to the India Office, and filled that appointment up to September 1911. The Army List assigns him no war service.

COLONEL WILLIAM ALFRED CORKERY, Bombay Medical Service, retired, died at Eastbourne on 10th May 1914. He was born at Bombay on 7th June 1855, the son of Conductor Martin Corkery, of the Ordnance Department. After qualifying as L.F.P.S., G and L.R.C.P. Ed., in 1881, he entered the I.M.S. as Surgeon on 2nd April 1881, becoming Surgeon Major on 2nd April 1893, and Lieutenant Colonel on 2nd April 1901. He was placed on the selected list on 14th July 1906, promoted to Colonel on 1st January 1909, and retired on 26th August 1912. He served in the Burma campaign in 1885-87, and received the medal with a clasp. By a curious coincidence, his father, Captain Martin Corkery, Assistant Commissary, Indian Ordnance Department, retired, died at Exmouth on 13th May, just three days after his son Captain Corkery got his commission as Lieutenant on 12th December 1877, and retired on 14th May 1891.

LIEUTENANT COLONEL HERBERT WILSON PILGRIM, Bengal Medical Service, retired on 11th May 1914. He was born on 10th October 1858, educated at Cheltenham College, and at University College, London, Baits, and Edinburgh University and took the L.S.A. and M.R.C.S. in 1884, and the M.B., London, in 1885, subsequently also the F.R.C.S., England, in 1902. He entered the I.M.S. as Surgeon on 30th September 1886, became Major on 30th September 1898, Lieutenant Colonel on 30th September 1906, and was placed on the selected list from 25th December 1911. He served on the North East Frontier of India in the Lushai Campaign of 1889, receiving the frontier medal with one clasp. Most of his service, however, was spent in civil employment in Bengal. He was appointed to that province in June 1890, and, after serving for nearly two years as Civil Surgeon of Nadiya, came to the Presidency General Hospital, Calcutta, as second Resident Surgeon in April 1892, and in that hospital, with the exception of two short intervals during which he officiated as Civil Surgeon of the 21 Parganas, he spent the remainder of his service. He became first Resident Surgeon in 1896, and in June, 1898, while still holding the rank only of Captain, was appointed Surgeon Superintendent of the hospital, the most junior officer who ever held this charge, one of the most important professional posts in the service. How well he discharged the duties of the appointment, and how thoroughly he justified his selection for it, is well known to all who have lived or served in Calcutta during the past fifteen years. Not only was he a first class all-round master of his profession, distinguished alike as physician and as surgeon, but during his tenure of the post he showed great business ability. The hospital, the most important in Eastern India, had fallen somewhat behind the times, and it fell to Colonel Pilgrim's lot to supervise, and in part to plan, the construction of an entirely new and up-to-date hospital. The whole hospital, as it stood at his appointment, has been pulled down, block by block, and magnificent new buildings, thoroughly equipped on the most modern lines have taken the place of those which the senior members of the service first knew. The only buildings which remain as they were twenty years ago, and have not been replaced by new ones, are those contained in the block of Resident Surgeon's quarters. *Sicut monumentum quod vis, circumspice.* It may also be mentioned that, while acting as Civil Surgeon of the 21 Parganas, Colonel, then Surgeon Captain Pilgrim, carried out the furnishing and equipment of the Sambram Nath Pandit, or South Suburban, Hospital at Bhawanipur, the first hospital on modern lines erected in Calcutta, or in

Bengal. For the past two years, since 15th April 1912, Colonel Pilgrim had been on furlough.

LIEUTENANT COLONEL J. N. MACLEOD, C.I.E., Indian Medical Service (Bengal), an Agency Surgeon of the 2nd Class, is granted privilege leave for three months, combined with furlough for four months and study leave for three months, with effect from the 5th February 1914, under Articles 233 and 303 (b) of the Civil Service Regulations, and the Regulations prescribed in the notification by the Government of India in the Army Department, No. 867 Medical Department, dated the 6th September, 1912.

CAPTAIN A. R. S. ALFLANDER, Indian Medical Service, Medical Officer, 28th Cavalry, held charge of the current duties of the office of Civil Surgeon, Quetta, in addition to his own duties, for the period from the 5th February 1914.

MAJOR W. M. ANDERSON, Indian Medical Service, an Agency Surgeon of the 2nd Class, is posted as Civil Surgeon, Quetta, with effect from the 8th March, 1914.

CAPTAIN R. E. FLOWERDEW, Indian Medical Service, is appointed substantively *pro tempore* to be Superintendent of the cellular and female jails, and Civil Surgeon, Port Blair, with effect from the 19th March 1914, until further orders.

MAJOR T. C. McCOMBIE YOUNG, I.M.S., Deputy Sanitary Commissioner, Assam, is granted privilege leave for three months, under Article 260 of the Civil Service Regulations, with effect from the 23rd June 1914, or any subsequent date on which he may avail himself of it.

CAPTAIN J. F. JAMES, I.M.S., Civil Surgeon, Sibsagar, is appointed to officiate as Deputy Sanitary Commissioner, Assam, during the absence on privilege leave of Major T. C. McCombie Young, I.M.S., or until further orders.

CIVIL ASSISTANT SURGEON KSHITI BHUSAN SFN, in medical charge of the Sadi sub division of Jorhat, is appointed to officiate as Civil Surgeon, Sibsagar, in addition to his own duties, during the absence of Captain J. F. James, I.M.S., appointed to officiate as Deputy Sanitary Commissioner, Assam.

LIEUTENANT COLONEL W. D. SUTHERLAND, M.D., I.M.S., on special duty at the Medical College, Calcutta, as Imperial Serologist, is appointed to be a Chemical Examiner to the Government of Burma, for the purpose of section 510 of the Code of Criminal Procedure, 1898.

The following appointments and postings are ordered in the Civil Medical Department, Burma —

MR W. D. JONES, L.M.S. (Mad.), L.R.C.P. & S. (Edin.), Civil Surgeon, Kyaukse, is deputed to Kasauli for training in Clinical Bacteriology and Technique.

CIVIL ASSISTANT SURGEON RAJANGAM SIVA SUBRAMANIA AIYAR, L.R.C.P. & S. (Edin.), L.M. (Dab.), is appointed to officiate as Civil Surgeon, Kyaukse, during the absence of Mr W. D. Jones, L.M.S. (Mad.), L.R.C.P. & S. (Edin.).

MAJOR E. R. ROST, I.M.S., was granted by His Majesty's Secretary of State for India study leave from the 26th May 1913 to the 15th August 1913 and from the 15th September 1913 to the 26th October 1913.

CAPTAIN W. J. COLLINSON, I.M.S., officer on plague duty, Meerut, privilege leave for one month and five days from the 1st May 1914.

CAPTAIN R. S. TOWNSEND, I.M.S., officer on plague duty, Aligarh, to hold charge of the office of officer on plague duty, Meerut, in addition to his other duties, like Captain W. J. Collinson, I.M.S., granted leave.

PRIVILEGE leave for six weeks, under Article 260 of the Civil Service Regulations, is granted to Captain C. C. C. Shaw, M.D., B.S., I.M.S., officiating Civil Surgeon, Raipur, with effect from the 1st April 1914.

Order No. 504, dated the 23rd March 1914, is hereby cancelled.

SIR JAMES JOHN TREVOR LAWRENCE, second Baronet, K.C.V.O., of 57, Prince's Gate, S.W., and of Burford Lodge, Dorking, Surrey, formerly of the Indian Medical Service, M.P. for Mid-Surrey and Reigate, 1875-93 for 12 years Treasurer of St Bartholomew's Hospital, and for 28 years president of the Royal Horticultural Society, left unsettled property, of which the net personalty amounts to

£11,732 He left to his wife the use for life of his art collection, including his Japanese lacquers and enamels and his Oriental, English, and other European porcelain, with remainder to his residuary estate, and requested that she would give to the Royal Gardens at Kew any of his collection of plants as should be mainly of botanical interest — *Times, 17th April*

MAJOR J G SWAN, I M S, made over charge of the duties of the Superintendent of the District Jail, Jhelum, to Captain R T Wells, I M S, on the afternoon of the 22nd April 1914

MAJOR S H LEF ARBOTT, I M S, made over charge of the duties of the Superintendent of the Ferozepore District Jail to Major W W Jeudwine, I M S, on the afternoon of the 22nd April 1914

MAJOR H CROSSLE, Indian Medical Service, an Agency Surgeon of the 2nd class, on return from leave, is posted as Civil Surgeon, Hazara, with effect from the 13th April 1914
CAPTAIN F E WILSON, Indian Medical Service, an officiating Agency Surgeon of the 2nd class, on return from leave is posted as Civil Surgeon, Sibi, with effect from the 20th April 1914

CAPTAIN C L DUNN, I M S, Depy Sanitary Commissioner, U P, was on study leave from 5th December 1913, till 13th March 1914

LIEUTENANT COLONEL R G TURNER, I M S, Civil Surgeon, Lucknow, is appointed to be professor of midwifery, King George's Medical College, Lucknow, in addition to his own duties, with effect from the 30th March 1914

CAPTAIN R S TOWNSEND, I M S, officer on plague duty, Aligarh, is appointed to hold civil medical charge of Muttra, in addition to his other duties, vice Major H R Nutt, I M S, granted leave

MAJOR W S WILLMORE, I M S, Civil Surgeon, is transferred from Sitapur to Agra as Civil Surgeon and Principal, Medical School, vice Major E J O'Meara, I M S, granted leave

MILITARY ASSISTANT SURGEON T B BUTCHER, I S M D, is posted as officiating Civil Surgeon from Basti to Sitapur

CAPTAIN G S HUSBAND, I M S, acts as Superintendent of the Central Jail, Lahore, during the absence of Major E L Ward, I M S, who is acting as Inspector General of Prisons, Punjab, in the absence of Lieutenant Colonel Braide, I M S, on three months' leave

LIEUTENANT COLONEL C DUFR, I M S, Civil Surgeon, Burma, has been granted extraordinary leave without pay for six months in continuation of leave granted Lieutenant Colonel Duer went on leave on 2nd May 1914

IN exercise of the powers conferred by section 6 of the Indian Factories Act, 1911 (XII of 1911), His Excellency the Governor in Council has been pleased to appoint Major A W Tuke, F R C S (R), D P H, I M S, Presidency Surgeon, Second District, to act as Certifying Surgeon for factories situated within the limits of the Town and Island of Bombay, and of the municipal district of Kurla in addition to his own duties, during the absence on leave of Dr J H Walsh, or pending further orders

MAJOR H B STEPHEN, I M S, made over temporary charge of the Belahampore Jail to Captain H A H Robson, I M S, on the afternoon of the 12th May 1914

MAJOR E J O'MEARA, I M S, Civil Surgeon and Principal, Medical School, Agra, privilege leave for three months, from the 9th May 1914, or subsequent date

MAJOR H R NUTT, I M S, Civil Surgeon, Muttra, privilege leave combined with furlough on medical certificate for a total period of eight months, from the 31st March 1914

CAPTAIN W H BOALTH, I M S, has been granted privilege leave of absence for two months, with effect from the 27th March 1914

HIS Excellency the Governor in Council is pleased to appoint Assistant Surgeon Kalyandas Jethanand Shirdasani, I M S, to act as Civil Surgeon, Larkana, during the absence on leave of Captain W. H Boalth, I M S, or pending further orders

LIEUTENANT COLONEL T W IRVINE, Indian Medical Service (Bombay), an Agency Surgeon of the 2nd class, is appointed to officiate as an Agency Surgeon of the 1st class and Chief Medical Officer in the North West Frontier Province, with effect from the 1st May, 1914

The Governor of Bombay in Council is pleased to make the following appointments —

Captain I D JONES, V D (London), I M S to act as Police Surgeon, Bombay, in addition to his own duties, from the date of departure on leave of Major S A Powell, M B, M Ch, and pending relief by Major C C Munison, I R C S F, D P H (Edin & Glas), D T M (Liverpool), I M S

MAJOR C C MUNISON, I R C S F, D P H (Edin & Glas), D T M (Liverpool), I M S, on the close of the Matheran Season, to act as Police Surgeon, Bombay, in addition to his own duties, during the absence on leave of Major S A Powell, M B, M Ch, or pending further orders

CAPTAIN F C ROGERS, I M S, is appointed to officiate as Civil Surgeon of Coorg, during the absence on leave of Lieutenant Colonel J L Macrae, V B, I M S, or until further orders

LIEUTENANT COLONEL J L MACRAE, M B, I M S, Civil Surgeon of Coorg, is granted privilege leave for three months with furlough for one year in continuation with effect from the 7th July 1914, or the subsequent date on which it is availed of

INDIAN SUBORDINATE MEDICAL DEPARTMENT ASSISTANT SURGEON BRANCH *Bengal Establishment*

The following promotions are made —

1st Class Assistant Surgeon William Christopher Montague Charter, (seconded), to be Senior Assistant Surgeon with the honorary rank of Lieutenant, subject to His Majesty's approval, and to remain seconded and

1st Class Assistant Surgeon George Cornelius Francis Holmes to be Senior Assistant Surgeon, with the honorary rank of Lieutenant, subject to His Majesty's approval, to complete the establishment, with effect from the 1st January 1914

—The following promotions are made —

Bombay Establishment

Senior Assistant Surgeon and Honorary Lieutenant Lewis Mathew Cabral to be Senior Assistant Surgeon, with the honorary rank of Captain, subject to His Majesty's approval, and

1st Class Assistant Surgeon Christopher Charles Augustus Wale to be Senior Assistant Surgeon, with the honorary rank of Lieutenant, subject to His Majesty's approval, to complete the establishment, with effect from the 1st January 1914

Bengal Establishment

—The undermentioned 2nd Class Assistant Surgeons having completed seven years' service in that class and passed the required departmental examination, to be 1st Class Assistant Surgeons, with effect from the dates noted against their names —

William Warnett Turner	—15th April 1914
Edward Aubrey Davies	
William Henry Brown	
Frederick George Cutler	
Edgar Osborne Johnson	

William Fitz Allan Parrott, —27th April 1914

LIEUTENANT COLONEL J PENNY, I M S, has been granted by His Majesty's Secretary of State for India an extension of five months' extraordinary leave without pay on medical certificate

LIEUTENANT COLONEL J PENNY left Burma on leave on 25th December 1912

LIEUTENANT COLONEL HENRY SMITH, V D S, M D, has been granted 3 months' privilege leave from 22nd May

MAJOR W W JEWUDWINE, I M S, is appointed Civil Surgeon of Ferozepore, vice Major Lee Abbott, I M S, granted leave

CAPTAIN R T WELLS, I M S, is appointed Civil Surgeon of Jhelum, vice Major I G Swan, I M S, transferred

CAPTAIN H C KEATFS, I M S, is appointed Civil Surgeon, Multan, vice Major M Colly, I M S, transferred

LIEUTENANT COLONEL C MC SMITH, I M S, is appointed Civil Surgeon of Murree, from 6th April

LIEUTENANT COLONEL A W T BUIST, I M S, is appointed Civil Surgeon of Dalhousie from 6th April and Khan Sahib Dewan Ali is appointed to act as Civil Surgeon of Campbell Pore, vice Lieutenant Colonel Buist

Major G J G Young, I M S, has passed the prescribed test in the Brahui language held at Quetta on 4th May

MILITARY ASST SURGEONS A C VARDON J R Carter, and J G Pereira have passed the higher standard in the Balochi language at Quetta

MAJOR E F Gordon Tucker, M B, B S (Lond), I M S, is granted furlough for nine months in continuation of the privilege leave of absence granted to him by Government Notification No 2251, dated the 20th March 1914

Government Notification No 3100, dated the 21st April 1914, is cancelled

THE civil surgeon, Gorakhpur, to hold visiting charge of the Basti district, vice Military Assistant Surgeon T B Butcher, I S M D, transferred

CAPTAIN J F BOYD, I M S, on completion of his special plague duty in the Ballia district, to be officer on plague duty, Bareilly, with charge of the Bareilly Circle of travel ling dispensaries

THE King's Birthday Honours List came out too late for us to give a complete list of the honours to Medical men

The 150th Anniversary of the I M S is fitly celebrated by Sir Leonard Rogers' well deserved Knighthood, the C B to Lt Col W R Edwards, C M G, and Colonel C C Manifold, the C I E to Lt Colonel Molesworth, Lt Col Bell and Major E D W Gleig, I M S

MAJOR C S LOWSON, M B, I M S, Acting Inspector General of Prisons, Bombay Presidency, is granted, with effect from the 21st June 1914, or the subsequent date on which he may avail himself of it, such privilege leave as may be due to him on that date in combination with furlough for such period as may bring the combined period of absence up to twenty months

SECOND grade Assistant Surgeon Narendra Nath Chaudhuri, attached to the Noakhali Dispensary, is appointed to hold charge of the civil medical duties of that station in addition to his own duties, with effect from the afternoon of the 26th April 1914, during the absence of Military Assistant Surgeon F H Gleeson, on deputation to the Central Research Institute, Kasauli, or until further orders

CAPTAIN A DENHAM WHITE, I M S, is appointed temporarily to be Civil Surgeon of Lakhimpur, vice Major Copinger, I M S, who returned to Bengal to act for Lt Col Maynard, I M S, on leave

COLONEL A O EVANS, I M S, Inspector General of Civil Hospitals, Burma, is granted, with effect from the 25th May 1914, combined leave for eight months, viz privilege leave, under Article 260 of the Civil Service Regulations, from the 25th May to the 24th August 1914, and leave on private affairs under paragraph 226, Army Regulations, India, Volume II, from the 25th August 1914 to the 24th January 1915

LIEUTENANT COLONEL G J H BILL M B, I M S, Inspector General of Prisons, Burma, is appointed to officiate as Inspector General of Civil Hospitals, Burma, during the absence on leave of Colonel A O Evans, I M S, or until further orders

THE service of Captain R G G Crilly, M B, I M S, are placed temporarily at the disposal of the Government of Madras for civil employment

WITH the approval of the Most Hon'ble the Secretary of State for India, the Government of India are pleased to confer a Good Service Pension of £ 100 per annum on the undermentioned officer —

From the 10th January 1914, in the room of Surgeon General H W Stevenson, C S I, I M S, Retired List
The Hon'ble Surgeon General R W S Lyons, M D, Indian Medical Service.

This is granted under A R I, Vol I, paras 744-47, as Surgeon General Lyon entered the service after 30 June 1881 (viz in 1882). This pension will be relinquished when he has served and earned the extra pension of his rank (*Vide* Seton and Gould's Manual of I M S, p 120)

THE following promotions are made —

Senior Assistant Surgeon and Honorary Lieutenant Harry William DeLanty to be Senior Assistant Surgeon with the honorary rank of Captain, subject to His Majesty's approval

1st Class Assistant Surgeon Percival Beatson Mills (*seconded*), to be Senior Assistant Surgeon with the honorary rank of Lieutenant, subject to His Majesty's approval, and to remain *seconded*,

1st Class Assistant Surgeon John Jeremiah Alexander Brachio (*seconded*), to be Senior Assistant Surgeon with the honorary rank of Lieutenant, subject to His Majesty's approval, and to remain *seconded*,

1st Class Assistant Surgeon George Patrick O'Brien, (*seconded*), to be Senior Assistant Surgeon with the honorary rank of Lieutenant, subject to His Majesty's approval, and to remain *seconded*,

1st Class Assistant Surgeon Christopher George Thompson (*seconded*), to be Senior Assistant Surgeon with the honorary rank of Lieutenant, subject to His Majesty's approval, and to remain *seconded*,

1st Class Assistant Surgeon Henry Mansfield (*seconded*), to be Senior Assistant Surgeon with honorary rank of Lieutenant subject to His Majesty's approval, and to remain *seconded*, and

1st Class Assistant Surgeon Edward Joseph Archer to be Senior Assistant Surgeon, with the honorary rank of Lieutenant, subject to His Majesty's approval, vice Senior Assistant Surgeon and Honorary Captain A G Bowder, supernumerary, with effect from the 28th January 1914

Notice

SCIENTIFIC Articles and Notes of interest to the Profession in India are solicited. Contributors of Original Articles will receive 25 Reprints gratis, if requested

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Original Articles.

THE B N A

By CHARLES MILNE, M.B.,
LIFUT COL., I.M.S.,

Civil Surgeon, Mussoorie, U.P.

LATELY the spirit moved me to revise my anatomical knowledge, and to this end I procured the new edition of Cunningham's Text-book of Anatomy. It is a beautiful book, a wonderful book, a pleasure to look at and to turn the pages over, and a still greater pleasure to read carefully, but if it is a text-book for students as it apparently is I can only profoundly thank fate that my time for passing an examination in anatomy is now long past. My modest "Gray" of the eighties is a slim volume compared with the one now before me, and to add to the student's difficulties in mastering such an enormous tome, the Basle nomenclature has been adopted in all its bald crudity.

It was no doubt desirable for some reasons that the names of many of the structures should be revised, but it is not easy to see the necessity for such a great revolution in nomenclature. To an old student like myself it is very perplexing to follow a description when the new names are given unqualified, some of the old terms, it is true, are given in brackets after the new, but in the majority of cases it is not so.

It is in the brain and spinal cord that the largest number of changes have taken place, and I cannot think the changes have always been good, or the new terms wisely chosen.

Prof. Elliot Smith, of Manchester University, has rewritten the section on the brain and spinal cord. The description given is very complete and very interesting to read, and after a little practice not at all difficult to follow. Many of the terms in this work are the invention of Prof. Elliot Smith himself, and I do not know if other text-books have adopted them *in toto* or not. To show, however, how chaotic the nomenclature is, I would point out that there are now two structures in the brain called *striae medullares*—viz., the old familiar *striae acusticae* of the fourth ventricle and the more recently described *striae pineales* or *taeniae thalami* near the trigonum habenulae. The term *striae medullares* as applied to a structure in the medulla is quite accurate, but to apply the same name to a structure in the mid-brain shows a great poverty of invention, or a still greater carelessness.

All the old terms describing structures by the names of the persons who discovered them—and which had been given by devoted pupils in honour of then great masters—have disappeared. No

longer do we have the fissure of Sylvius, the fissure of Rolando, the foramen of Munro, the aqueduct of Sylvius and the like—but the Fallopian tube, the pouch of Douglas, the canal of Nuck, and many others have disappeared, even from the index.

In certain instances there can be no doubt about the advantages derived from the new nomenclature, notably in the spinal cord where the naming of tracts after individuals, i.e., Goll, Burdach, Gower Clark Flechsig, Lissauer-Turek and the like, had reached a degree that was truly perplexing. I doubt very much, however, if some of the new names are as simple and descriptive as they might very well have been. The columns of Goll and Burdach used formerly to have the alternative names of "postero-internai" and "postero-externai" applied to them, these names were simple and expressive, and stated exactly where the tracts were to be found. They are now called the fasciculus gracilis and the fasciculus cuneatus not, be it remarked because the tracts are slender or wedge-shaped but because they end in the nucleus gracilis and nucleus cuneatus in the medulla. These names, however, would be all right if the law-givers had stuck to this particular method of nomenclature, but the pyramidal tracts, which of old received their names because they were continuous with the pyramids of the medulla and were names, one might say, which were hallowed by the clinical studies of Charcot, and the embryological researches of Flechsig, have a somewhat different method applied to them. They are now called the anterior and lateral cerebro-spinal tracts very excellent and descriptive names, no doubt, but so were the old terms the pyramidal tracts. Of course, it could be objected to the old names that the tracts did not end in the pyramids but simply passed through them, but neither do they end in the cerebrum as a whole, but in a very restricted portion of it—the precentral gyrus. To be strictly accurate and definite in our nomenclature, this tract ought, therefore, to have been called—fasciculus precento spinalis. The fact is that when once a re-distribution of names is started, it is very difficult indeed to be invariably logical and exact.

It would be wrong perhaps to expect elegance in our anatomical nomenclature, and the trapezoid bone may not have been a very elegant term, but what of the cacophonous monstrosity which has replaced it—the os multangulum minus. Even in English its name is uncouth and forbidding—the lesser multangular bone. In ancient Rome a man might very well have been thrown to the lions for a less glaring barbarism.

I suppose it is necessary from an international point of view to have given all the structures Latin names, but it must be remembered that Latin now-a-days is very little taught in our

schools and colleges, and it is possible that those who are now alive may yet see that Latin will merely be the gift of the literate, as it was in the middle ages. Then what of these terms and expressions? They will convey nothing to the students, and will only be a burden to their memories.

Similarly, it should not be forgotten that the whole of Asia and Africa will, within a reasonable period, be imbibing knowledge from European text-books. To them Latin is not only a dead language, but a language that never existed. We all know how difficult it is to memorise words in a foreign language, which convey no meaning to us—how much more difficult will it be for a Chinese, Javanese, Indian, Persian and a Soudanese to have a working knowledge of these difficult anatomical terms?

European teachers, I believe, state that the new terms are no more difficult to their students than the old ones, but the present students have probably had some grounding in Latin. What will it be in 50 years' time, if Latin is no longer taught as an ordinary subject of preliminary study?

I have thought that it might interest the readers of this journal if I indicated a few of the changes in the nomenclature and at the same time give short biographical sketches of the famous men of old, whose names have been familiar to all medical men for generations, and which are now so ruthlessly and needlessly displaced.

One of the charms which anatomy had for us was to come across a proper name now and then, and to speculate who the old-time anatomist was, and to wonder to what country and to what century he belonged. It was always consoling to us to know that the names of structures and organs were not names, so to speak, from the beginning of time, but that some industrious mortal had explored and laboured before our time.

The *Toricular Herophili*—the wine press of Herophilus—perhaps the most ancient anatomical name we now possess—is now called the *Confluens Sinuum*. Herophilus was a Greek physician born at Chalcedon about 340 B.C. He was founder of the medical school at Alexandria, and was one of the most famous physicians of antiquity. The great vein of Galen is now called *Mena Magna Cerebri*. Claudius Galenus, circa 130-200 A.D., is the best known physician of ancient times. He was a Greek, born at Peigamos, and studied at Alexandria. He finally settled in Rome, and was physician to the successive Roman Emperors—Marcus Aurelius, Commodus, Sextus, and Severus. He wrote eighty-three treatises, and his books were authoritative, down to very recent times.

The circle of Willis is now known as the *Circulus arteriosus*. Thomas Willis, an English

physician, was born 1621, he was for a time professor of natural philosophy at Oxford, but he later on went to London, where he practised as a physician. He made a great reputation by the publication of a work on the brain, and he was the first physician to recognise and describe that interesting and intractable disease,—Myasthenia Gravis. He died about 1675. The *Pacchionian bodies* are now the *Achondral granulations*. Antonio Pacchioni was an Italian anatomist, born 1665, died 1726.

The pituitary gland is now very properly called the *Hypophysis cerebri*. The old name was given on account of erroneous physiology, as it was supposed that this gland secreted the pituita or mucus of the nose.

The *Sella Turcica*, or Turkish saddle, has an alternative name, the *Fossa Hypophyseos*. There can be no doubt which is the more descriptive and expressive term. The *Pons varoli* is now *Pons* simply—Costanzo Varolius was an Italian anatomist, 1542—1575.

The valve of Vieuussens is now the *superior medullary velum*. Raymond de Vieuussens was a French anatomist, 1641—1715.

The cerebellar peduncles are now called the *Restiform Body*, the *Brachium pontis* and *Brachium conjunctivum*.

The fissures of Sylvius is now the *Lateral cerebel fissures* and the aqueduct of Sylvius, the *aqueductus cerebri*.

There were two distinguished anatomists of the name of Sylvius. The first was Jacques du Bois (Jacobus Sylvius). He was the teacher of Vesalius and was born in 1475, and died in 1555. It was Francois de la Bois (Sylvius) after whom these structures are named. He was born in 1614 and died in 1675. Like his predecessor, he latinised his name of Bois or Wood, to Sylvius.

The fissure of Rolando is now the *Sulcus centralis*. Luizi Rolando was an Italian anatomist, born in 1771 and died in 1831.

This fissure, and the ascending parietal, and ascending frontal convolutions, were first described by Vicq d'Azyr in 1785, but they were described in greater detail by Rolands in 1829. It was in 1839 that Lewret, a French anatomist, and physiologist, gave the name to the region, which up to now it has borne.

The Bundle of Vicq d'Azyr is now the *Pedunculus mamillo thalamicus*. Felix Vicq d'Azyr was a French physician, born in 1748. He was professor of anatomy in Paris and lectured there about 1773. He wrote many important anatomical works, and died in 1794.

The Island of Reil is now the *Insula*. Johann Christian Reil was a German anatomist, who taught in Halle—he was born in 1758 and died in 1813. The Foramen of Magendi is now the *apertura medialis*. Francois Magendi was a French physiologist, born in 1783, died in 1855, he it

was who discovered that the posterior nerve-roots were sensory, and the anterior motor—a discovery which he shared with our own Sir Charles Bell.

The Foramen of Munro is now the *Foramen Intervenitulare*. Alexander Munro (Primus), the first of the celebrated professors of Edinburgh University of that name, was born 1697,—died 1767. He was professor of Anatomy and Surgery in Edinburgh 1725–1759, and wrote many works on Osteology, Comparative Anatomy and Human Anatomy and Physiology.

The Casseian Ganglion is now the *Semi-lunar Ganglion*. I have discovered very little about the history of Casseius—he was born in 1505 and died about 1577.*

The names of the Gyri and Sulci of the brain have on the whole been very little changed but the greater accuracy with which areas have been mapped out, have necessitated the addition of many new names which it is hardly possible to repeat here.

The Corpus Callosum and the Fœnix both very old names have been left unchanged. In a seventeenth century English dictionary which I have by me, I find under Fœnix “The brawny part of the brain. It is possible the term Fœnix at one time included the Corpus Callosum, as Fœnix, an aich, admirably describes it. The Gyrus Fornicatus has again been changed from Callosal Gyrus to *Gyrus Cinguli*.

The Uncus is now the *Puriform Area*, the Hippocampal Gyrus the *Gyrus Paracentralis*, the Lamina Cereata is now the *Lamina Terminalis*, which undoubtedly more accurately describes its embryological relationships.

The Tænia Semicircularis is now the *Stria Terminalis*, and the Middle Commissure the *Massa Intermedia*. The nomenclature of the spinal cord tracts and areas has been radically altered and all to the good—although it might have been possible to have simplified the names a little more.

The various tracts and columns have now received names which indicate their origin and destination, and this should very greatly help the student in studying the anatomy physiology, and diseases of the cord.

It is not possible to detail them here. The bony skeleton has also come in for a share of new names—it is to be wished that one could say they are all improvements. The axis is now known as the *Epistropheus*, the Gladiolus is now *Corpus Sterni*, the Turbinated bones *Conchæ nasales*.

The Antium of Highmore is now the *Mavillary sinus*. Nathaniel Highmore was an English surgeon, born 1613, died 1684.

The Bones of the Carpus have practically been re-named, and the names seem very barbarous

The os Innominatum is now the *os Copæ*, and the Astragalus is the *Talus*. The os sacrum is, curiously enough, still retained, as the name of the key-stone of the pelvis. It would be very interesting to know how it came about that the os sacrum, or sacred bone, received this designation for in these days, to say the least of it, it does not seem to be held in such very high esteem. Regarding the structure of the bones, it is pleasant to note that the term Haversian Canal has been retained. Clopton Havers was an English anatomist born in 1650, died 1702.

The digestive system and abdominal organs have come in for a considerable amount of change. Stenson's duct is now the *Ductus Parotidis*. Niels Stenson, or Nicolas Steno was a Danish anatomist who had a singularly interesting history. He was born at Copenhagen in 1638 where he also studied medicine. He achieved great fame by his studies in the glands, the heart, and the brain. Later he settled in Florence turned Catholic, and was afterwards made a bishop. He was sent as Vicar-apostolic to North Germany, and died in 1687. He was the first to point out the nature of fossil deposits.

Wharton's duct is now *Ductus Submaxillaris*. Thomas Wharton was an English physician and anatomist—born 1610, and died in 1673.

He it was who described the soft pulpy matrix of the umbilical cord now called Wharton's jelly.

The Eustachian tube is the *Auditory Tube* and the Eustachian valve of the heart is now the *Valvulae Venaæ Cavae*. Bartholomew Eustachio was an Italian anatomist, who died Professor of Medicine in Rome in 1574. He wrote several important works, one of which “Opuscula Anatomica” was published in 1564, but his “Tabulæ Anatomice” were not published till long after his death 1714.

The Foramen of Winslow is now the *Foramen Epiploicum*. Contrary to what we would expect, from the name of a certain quack medicine, Jakob Benignus Winslow was not English. He was a Danish anatomist, domiciled in France. He was Professor of Anatomy and Physiology at the Royal Botanical Gardens, Paris. He wrote an important work, “The Exposition Anatomique de la structure du corps Humain”. He died in 1760. There would appear to be some connection between him and Forbes Winslow, the celebrated English alienist who was born at Aberdeen in 1810. His full name was Forbes Benignus Winslow. The Pouch of Douglas is now the *Excavatio Recto-Uterine*, and the fold of Douglas, is the *Linea Semicircularis*. James Douglas, a Scottish anatomist, settled in London, born 1675, died 1742. He was apparently a precursor of the famous Scottish anatomists who have taught the English their anatomy for the last 200 years.

* [One of Harvey's teachers at Padua, see Garrison's *Hist. Med.* p 182—Ed.]

Peyer's Patches have now the interesting and descriptive name of *Noduli lymphatici aggregati*. Johann Conrad Peyer was a Swiss anatomist, born 1653, died 1712.

The columns of Moigagni are the *columnae rectae*, the Hydatids of Moigagni, male and female, are respectively the *Appendix testis* and *Appendices vesiculosi*. Giovanni Battista Moigagni was an Italian anatomist, born 1682, studied under the famous Valsalva at Bologna—died 1771. He was Professor of Medicine at Padua. Antonio Maria Valsalva is now chiefly remembered for his experiment of inflating the Eustachian tube. His special study was the anatomy of the ear. The sinuses of Valsalva are now the Sinus Aortæ.

Very considerable changes have taken place in nomenclature of the generative organs, chiefly in the female. The Graafian Follicles are now the *Folliculi oophori vesiculosi*. Reinhardt de Graaf was a Dutch physician and anatomist, born 1641, died 1673.

The Discus Proligerus is the *Cumulus Oophorus*. The Fallopian tube is the *Tuba Uterina* and the aqueductus Fallopii is now the *Canalis tectorius*. Gabriele Fallopio (Fallopius) died in 1562. He was the friend and pupil of Vesalius. He was Professor of Anatomy and Surgery at Padua, and his special study was the vessels and bones of the foetus.

Andrea Vesalius has been more fortunate than many of the other old-time anatomists for the small foramen in the sphenoid bone is still called the Foramen of Vesalius. He was born in 1514, studied at Louvain and Paris, and afterwards taught anatomy at Pavia, Pisa and Bologna. He was said to be the most famous anatomist of the 16th century. He published his great work *De Fabrica Humanæ Corporis* in 1542. Suddenly he went on a pilgrimage to Jerusalem and the reason assigned for this strange step was still more strange, and hardly credible. He was found guilty by the Holy Office of opening a body for dissection before death—the heart quivering in his hand—it was said. He was allowed to expiate his offence by this pilgrimage. He was wrecked on his way home to Italy, and died of starvation on the island of Zante at the early age of 50 years.

Gaertner's Duct is the *Ductus Epoophori Longitudinalis*. Karl F. Gaertner was a Danish anatomist—born 1785, died 1807.

The Canal of Nuck is the *Processus Vaginalis Peritonei*. Anton Nuck a Dutch anatomist, was born 1650, died 1692. He was Professor of Anatomy at the University of Leyden then at the height of its fame. He wrote many works, chief of which was *Deductu Salivali Novo*.

Bartolini's Gland is now *Glandula Vestibularis Major*, and its male homologue Cooper's Gland is the *Glandula Bulbo-Urethralis*.

Thomas Bartolini was a Danish anatomist, he was born at Copenhagen in 1619, and was appointed Professor of Anatomy there in 1648. He wrote many anatomical books. Cooper was the famous English surgeon, Sir Astley Cooper.

The Wolffian body is now the *mesonephros*, but the Wolffian duct retains the name of the founder of Embryology.

Kaspar Friedrick Wolff was a Prussian, born at Berlin in 1733. He served as a surgeon in the Seven Years' War under Frederick the Great and later went to St. Petersburg where he died in 1794.

The organ of Geraldes, the vestigial remnants of the renal tubules of the Wolffian body, is now called the *Paiadidymis*. Its homologue in the female is the *Paiophoron*. Jachim Albin Geraldes was a Portuguese surgeon practising in Paris (1812—1875).

The organ of Rosenmüller, another interesting vestigial structure representing the genital tubules of the Wolffian body, becomes the *Epoophoron*, whilst its male homologue the Vasa Efferentia becomes the *Ductus Efferentia Testis*.

Johann Christian Rosenmüller was a German anatomist who taught in Leipsic. Born 1771, died 1821.

The Sinus Pocularis in the prostatic urethra—the remnants of the Mullerian ducts and representing the uterus and vagina of the female—is now very properly called the *Uterus masculinus* or *Utriculus prostataicus*.

The Muscular System and the ligaments and joints have not had many serious alterations in their names, and the alterations made have all been to make the names more descriptive.

The Supinator Longus is now the *Brachio Radialis*, the Crucial Ring is the *Femoral Ring*, and the Tendo Achillis the *Tendo Calcaneus*. Scarp's Triangle is the *Femoral Triangle*.

Antonio Scarp's, an Italian anatomist, was born at Motta in 1748. He was professor at Pavia from 1783 till 1812. He made a great reputation by his description of the nerves of the heart.

Poupart's Ligament also sometimes called the Ligament of Vesalius, is now the *Inguinal Ligament*.

François Poupart was a French anatomist 1661-1709.

Gimbernat's Ligament is now *Ligamentum Lacunare*.

Gimbernat is the one Spanish anatomist who has given his name to an anatomical structure he lived during the latter part of the 18th century.

The Cranial Nerves, no longer named numerically, are now described by their action, uses, or destination, e.g. oculo-motor, abducens, facial, etc. Some of the peripheral nerves have new names. The musculo-spiral is the *Radial*, the

Anterior Cervical the *Femoral*, Genito-cervical the *Genito-femoral*, the Great Sciatic the *Ischiadicus* and the Short Saphena is now the *Sural* or calf nerve

The heart has had some interesting and commendable alterations. The term *auricle* is now restricted to the auricular appendix, and the auricle is now called the *Atrium*. Of the alterations in the names of the arteries, the most important is the internal iliac, which is now the *Hypogastric artery*.

The eye, ear and larynx have all had alteration in their nomenclature bringing them in line with that of the rest of the body. They need not be specified here.

Such then are some of the more important alterations in the anatomical nomenclature, as dictated by the pundits of Basle. I cannot help thinking that our British and American anatomists have been far too complaisant to the ultra-scientific predilections of their continental brethren. It cannot for a moment be supposed that these names will stand in their entirety. A name, after all, is merely a label—a conventional symbol to call to our mind's eye a certain definite structure, organ, tissue, and the like. The term Graafian follicle or Peyer's Patch, gives an instantaneous mental impression of these structures which, having once been learnt, are for ever imprinted on the memory, but the mental gymnastics required to formulate the expression Folliculi oophori vesiculosi, or the noduli lymphatici aggregati, impose an amount of cerebration out of all proportion to their worth.

An analogy from our common English surnames will show more clearly the absurdity of these names than anything else. Our English surnames have been adopted amongst many other reasons for—

- 1 Some physical deformity in our ancestors
- 2 From their occupations
- 3 From some mental or physical accomplishment

At one time they were descriptive of the persons who bore them, and were no doubt distinctive and appropriate enough, but it is now long since we expect anything more in a proper name than a mere badge for convenience. When we speak of a Cuckshank, a Croom, a Courtney, or a Littlejohn, we do not call up now-a-days a mental vision of a knock-kneed or bandy-legged person or a person with a short nose, or an individual more than usually tiny. Neither when we speak to a Walker, a Lyster, a Baxter or a Webster do we think of a bleacher of cloth, a dyer, a baker, or a weaver. Nor when we talk of a Bull, a Bell, a Bonner, or a Black, do we believe the persons so named to have the physical or mental qualifications of a Bull, or that he is Belle or beautiful, or that he has *la bonne aventure*—a Black, indeed, may be red-haired and freckled.

Each name is a symbol whereby we recall certain associations, and to make a name completely descriptive, as some of these new anatomical names are intended to be, does not seem to me to be of such paramount necessity that the familiar names of centuries should be discarded in this wholesale way.

If this system of nomenclature is to be persisted in, where is it to end? Is it to be carried into all branches of science—as, for instance, Bacteriology? The term "gram negative" calls up at once a vision of certain qualities in a micro-organism which would take a sentence to describe. Similarly the terse word Giemsa informs us of a stain that six words could not describe. In the nomenclature of disease, perhaps the naming of diseases after the individuals who first describe them has been carried too far, but such names as Bright Addison and Hodgkin each recall in a word a definite and separate disease, although the names themselves are in no sense descriptive of it.

Names should be our obedient slaves, and not our masters, certain it is they have overwhelmed the anatomists—to our confusion.

SEGREGATION AND KALA-AZAR

A USEFUL MEASURE

BY W. MCCOMBIL YOUNG, M.B., D.P.H.,
MAJOR, I.M.S.,

Deputy Sanitary Commissioner, Madras

In the issue of the *Journal of Tropical Medicine and Hygiene* for February 16th, 1914, Dr. Dodds Price and Sir Leonard Rogers have drawn attention to the uniform success of segregation measures in eradicating kala-azar from Assam tea gardens. It may therefore be of interest to put forward a short note showing that a considerable measure of success has attended somewhat similar measures conducted by the Sanitary Department of the Assam Administration with the object of eradicating kala-azar from the indigenous Assamese population of the Golaghat sub-division of the Sibsagar district.

The history of the disease in this area, the investigations carried out in connection with it, and the measures we have put in operation, may be summarized as follows—

During the years when kala-azar was epidemic in the adjoining district of Nowgong, the Golaghat sub-division escaped invasion, presumably owing to its separation from the adjoining infected district by the barrier to free communication which the interposition between these two districts of the Mikir Hills presents and possibly also by the action of the district officials in refusing admission to infected families migrating from Nowgong during the epidemic there. Six years afterwards, in 1909, the attention of the Sanitary Commissioner, Eastern Bengal and

Assam, was directed to the occurrence of the disease in active form in certain villages of the subdivision.

The outbreak was, in the first place, investigated and verified by the provincial sanitary department, and later by Major Christopheis, I.M.S. He pointed out that the disease has probably been imported from Nowgong and that round these original foci of imported disease, other cases had appeared. In tracing the history of the disease, he obtained evidence of its extraordinary infectivity and of the manner in which member after member of an infected family became infected and died. He found that the disease had a well defined tendency to cling to certain groups of houses and to spread from them into surrounding areas. He considered that the disease was not showing any decided tendency to advance, but that so long as these foci exist, it would be impossible to say when the disease might not assume epidemic form, and that it would be unwise to rely, in our ignorance as to the transmission of the disease, upon conditions possibly not being so favourable to the spread of kala-azar in Sibsagai and Lakhimpur as in Nowgong. In view of the caution originally enjoined by Sir Leonard Rogers upon the public health administration of Assam lest the disease should gain an active footing in the economically important districts of Upper Assam Valley, it was decided to put measures of control in force. As a preliminary to these a house to house survey of the whole subdivision was carried out in detail.

When the number of infected villages, houses, and persons, had been ascertained in this manner segregation measures were put in force.

These consisted in supplying the infected family with a new house, at Government expense, upon a new site at a minimum distance of 50 yards from the old site, and in most cases at a greater distance.

As no separate isolation hospital for the reception of sick persons was in existence, nor indeed would popular opinion have consented to its utilisation had it been available, in many cases it was found necessary to remove the infected member of the family along with the uninfected persons to the new site. In such cases a separate sleeping apartment outside the house enclosure was provided and the adults of the family were cautioned to prevent the infected person from sleeping or eating with others.

On evacuation of the house in which infection had occurred it was burnt down, and with it, all bedding, clothing and other belongings which could presumably harbour insect parasites, were destroyed under the supervision of an assistant surgeon on special duty for the purpose. Liberal compensation was paid by Government for property so destroyed.

Since the commencement of these operations the work has been continuously supervised by the sanitary department and notes as to the condition and health of all infected or suspected families have been recorded monthly.

Records as to the result of the operations are therefore available.

In February 1913, after inspecting these operations, I noted as follows —

In Khumtar, the original centre of the infection, no recurrence has occurred in any of the nine infected families who were moved in 1911.

Two old cases still remain.

In one house, two new cases have been discovered, the survivors of a family of six persons, one of whom was thought to be doubtfully infected in 1911. They were not moved from the infected site. All are now dead of kala-azar, or have contracted it. This forms an interesting 'control' as showing what may happen to an infected family remaining on an infected site.

Habiswa there has been no recurrence in eight infected families who were removed in 1911. Two new cases were found in one previously uninfected family.

Padumani there has been no recurrence in four infected families removed to a new site in 1911. There are no old cases and no new cases.

Dungooria no recurrence has taken place in nine families removed to new sites in 1911, there are now no cases, old or new.

Batiporia Lukumani there are no recurrences in eight infected families removed in 1911. One recurrence has taken place in a family whose removal was imperfectly carried out. Three new cases were found in this village.

Batiporia Gorua no recurrences in two infected families moved.

Khongra two new infections. This village adjoins Batiporia Lukumani.

Kuralgori Bamongaon three infected families were discovered here last year, and two new infections were discovered this year.

Thus, out of forty infected families removed to new sites three years ago, a recurrence of the disease in a person not obviously infected upon the old site has occurred in only one case.

The people appear to recognise the value of the measures, and are grateful to Government for carrying them out. The active centre of the disease is now in Batiporia Lukumani and in Kuralgori Bamongaon.

Provided that no new and separate foci of the disease appear, it is possible that the disease may be extinct in this subdivision in a few years' time if these measures of control are continued.

These results are perhaps worth recording for the following reasons —

I. They appear to show the possibility of applying with success the same measures of segregation to the indigenous population as have proved of value in combating the disease among the labour force of a tea garden.

II. They show that measures of removal and segregation which, on *prima facie* evidence seemed to be most incomplete in that they involved the removal of an infected person to the new site, have been attended with an unexpected degree of success.

It appears that whatever complicated processes of disease transmission are covered by the convenient phrase 'site infection,' nevertheless it appears to play an important part in the propagation of the disease.

Whether the diminution of the disease is due to our operations, or is in reality due to a natural decrease in the course of the waxing and waning of the activities of an endemic disease, it is difficult to decide, but the fact that the disease is tending to increase rather than to diminish in the adjoining district of Nowgong, as will be seen from the subjoined figures to some extent confirms our belief in the usefulness of these measures.

	1909	1910	1911	1912	1913
Kala azar mortality in Nowgong		140	221	286	308

In conclusion I may be permitted to state that it is not suggested that these operations have been wide enough in scope or long enough in duration to afford much evidence as to the vexed question of the transmission of the disease. The object of this note is to draw further attention to the apparent usefulness as a public health measure of the removal of kala-azar infected families to new houses on uninfected sites.

THE OPERATION OF ELECTION FOR THE RADICAL CURE OF INGUINAL HERNIA *

BY E A R NEWMAN, M.D.,
LT COL, I.M.S.

THE names of many surgeons are associated with various operative procedures for this condition. Then methods are so differently described in text-books, that it is not easy to follow them. I propose to describe the operation which I have adopted during the last four years, as I believe it combines all the essential features of a really radical cure with the elimination of all unnecessary details, and then briefly consider how far it follows or departs from classical methods.

Anatomy and nomenclature—Hernias descending through the inguinal canal are known as "indirect" hernias. The conditions included in this description are three, viz., (a) a more less patent condition of the funicular portion of the tunica vaginalis, (Fig 1) (b) a completely patent condition of the tunica vaginalis, (Fig 2) and (c) a patent diverticulum of the peritoneum lying behind the spermatic cord (Fig 3),—all containing a portion of some normally abdominal organ. The nomenclature associated with them is given for clearness in a tabular form—

Former	Recent	Proposed
(a) Acquired	(a) Funicular	(a) Funicular
(b) Congenital	(b) Vaginal	(b) Tunical
(c) Infantile	(c) Post-funicular	(c) Post-funicular

The former nomenclature was bad, because it conveyed either an entirely false impression of the etiology of these conditions, or nothing at all. The recent nomenclature is not only anatomically and etiologically correct, but it is also self-explanatory and has much to recommend it from a surgical standpoint, as will be seen later. Poupard's claim that the term funicular is equally applicable to variety (b) and no doubt this is partly true, but the term funicular is a closer description of variety (a) and may well be reserved for it. For term "vaginal" I prefer the term "tunical" as the former adjective is better reserved for the female vagina, and in this paper I adhere to the expression "tunical".

In addition, we must recognize "direct" hernias, which protrude directly through the weakened posterior wall of the inguinal canal, internal to the deep epigastric artery and opposite to the external inguinal ring. These from an etiological standpoint, partake of the character of a ventral hernia, and are probably the only truly "acquired" hernias.

Surgically speaking the point of paramount importance is the physical relation of the sac to the spermatic cord. It is an almost invariable rule that in funicular and post-funicular hernias the sac is comparatively easily isolable from the spermatic cord, and that in tunical hernias the cord forms an integral portion of the sac wall, and that its isolation is correspondingly difficult.

Relative frequency—Right inguinal hernias are far more common than left. In a series of 32 cases, the comparative numbers are 26 and 6 respectively. What is still more important from an operative point of view, is that the tunical variety is far more common than any other, the post-funicular being the rarest. The comparative numbers are 24 tunical, 6 funicular and 2 post-funicular. In both these last 2 cases there was an extensive hydrocele extending through the internal ring and being partly pelvic.

The Operation—No operative procedure can to my mind be described as radical that does not definitely aim both at (a) abolishing the sac, and also (b) repairing the canal or closing the gap in the lower abdominal wall. An exception must be made in the case of children, in whom the normal muscular development is better calculated to close the gap, than suturing which may impair the muscular growth.

The operation is best described under the following steps—

- (1) The incision
- (2) The isolation of the sac
- (3) The removal of the sac
- (4) The repair of the abdominal wall

The incision is made $\frac{1}{2}$ to 1 inch above and parallel to the inner $\frac{2}{3}$ rds of the line of Poupard's ligament (Fig 4). It will thus be from $3\frac{1}{2}$ to 4 inches in length and will freely

* Read at the March Meeting of the Medical Section of the Asiatic Society of Bengal.

expose the whole length of the inguinal canal and its rings. A properly placed incision facilitates the subsequent steps considerably, if this has been made, the fibres of the external oblique aponeurosis, when exposed, will be found to be exactly parallel to it (Fig. 5).

The isolation of the sac.—The fat and subcutaneous tissue having been divided and all bleeding points secured, the aponeurosis of the external oblique is next split parallel to its fibres throughout the length of the wound, including the intercolumnar fascia at the inner angle. In preference to doing this with a director passed up the canal from the external ring, I usually just split the fibres opposite the centre of the canal with a knife, and complete the division upwards and downwards with a pair of angled scissors. The cord is now exposed to view (Fig. 6), and the search for the sac commenced. If the hernia can be induced to descend, much time will be saved in locating the sac. The wall of the supposed sac when found, should be held up at one point with a pair of dissecting forceps and carefully nicked with the knife. The opening is then enlarged longitudinally for an inch or more with the scissors. This manoeuvre saves much time and permits of the immediate exploration of the interior with the forefinger. This at once settles several important questions, viz., whether the true sac has been opened or not, whether the hernia is funicular or tunical, the size of the internal ring, and the presence or absence of adhesions.

In the funicular variety, with the forefinger inside the sac and the sac wall held between it and the thumb, the sac is most rapidly, and generally quite easily, separable from apex to neck by wiping the tissues of the cord off it with a gauze swab. The cord proper is but little interfered with and it is usually unnecessary to lift it more than partially from its bed.

In the tunical variety the separation is more difficult because the vas deferens and spermatic plexus of veins are so intimately adherent to the posterior wall of the sac. The same procedure is followed viz., wiping with a gauze swab, but along the adherent line a few touches with the knife are necessary. When the more easily separable portions of the funicular part of the sac have been freed, it is cut through transversely, thus separating it from the scrotal portion. The cut margin of the funicular portion is then clipped at intervals with forceps and held up, while the separation of the posterior adherent portion is completed right up to the internal ring (Fig. 7).

The removal of the sac.—In the funicular variety the sac after isolation is twisted into a cord at its neck, transfixed, ligatured, and the redundant portion cut off. The stump is then drawn up into the abdominal cavity, by passing the ends of the ligature in turn through the

internal ring and the abdominal wall and tying them externally, the knot lying on the extensible aponeurosis (Fig. 8).

In the tunical variety occlusion by ligature is usually impossible and a purse string suture must be passed right round the neck and tied. This may be varied by passing the suture where the sac is adherent, then crossing the ends and occluding the remainder of the neck by ligature. The redundant portion is next cut off and the stump drawn up as above described (Fig. 8). Any remains of the funicular portion must be carefully removed. The scrotal portion can either be left—with or without occlusion by ligature—or removed separately. As this adds considerably to the length of the operation I usually leave it, unless the sac is thin and easily separable, in which case it is stripped off early in the operation.

The repair of the abdominal wall.—The gap in the lower abdominal wall, at the site of the inguinal canal, is closed by pulling the transversalis and internal oblique muscles down, over the front of the cord and suturing them to the back of Poupart's ligament, with 2 or 3 square or mattress sutures of stout silkworm gut, placed in order from the internal to the external ring (Fig. 9), and finally tied in this order (Fig. 10). The outermost suture should obliterate the internal ring, and the innermost should close the external ring securely, without unduly constricting the spermatic vessels.

The thigh should be flexed slightly as the sutures are being tied. Lastly the cut margins of the external oblique aponeurosis are united by a continuous flat-thread suture (Fig. 11). The skin wound is then closed with a continuous suture (Fig. 12), and sealed with a pad of aseptic gauze, and a fine spica bandage applied.

Commentary.—The operation is much simpler to perform than to describe. Each step is carried out with precision and nothing is left to chance. The funicular portion of the sac is completely abolished in all cases, and the lumen of the canal subsequently sealed by simple inflammation. The abdominal wall is repaired as thoroughly as the thinned condition of the parts permits, as the internal ring is closed a direct acquired hernia, by stretching of the sac is only possible. This is guarded against in the after-treatment. It may be objected that the valvular action of the canal is abolished, but, on the other hand, a hernial protrusion at the external ring is rendered impossible, for the small gap left for the passage of the spermatic cord at the external ring is well protected by the pubic ramus posteriorly, and direct pressure of the abdominal contents at this, the weakest point, is very slight indeed.

I will now briefly consider how it departs from or approaches the classical operations of McEwen, Kocher, Bassini and Halsted. McEwen and Kocher do not divide the aponeurosis of the external oblique on the ground that it weakens this

THE OPERATION OF ELECTION FOR THE RADICAL CURE OF INGUINAL HERNIA

By Lt.-Col. F. A. R. NEWMAN, M.D., I.M.S.

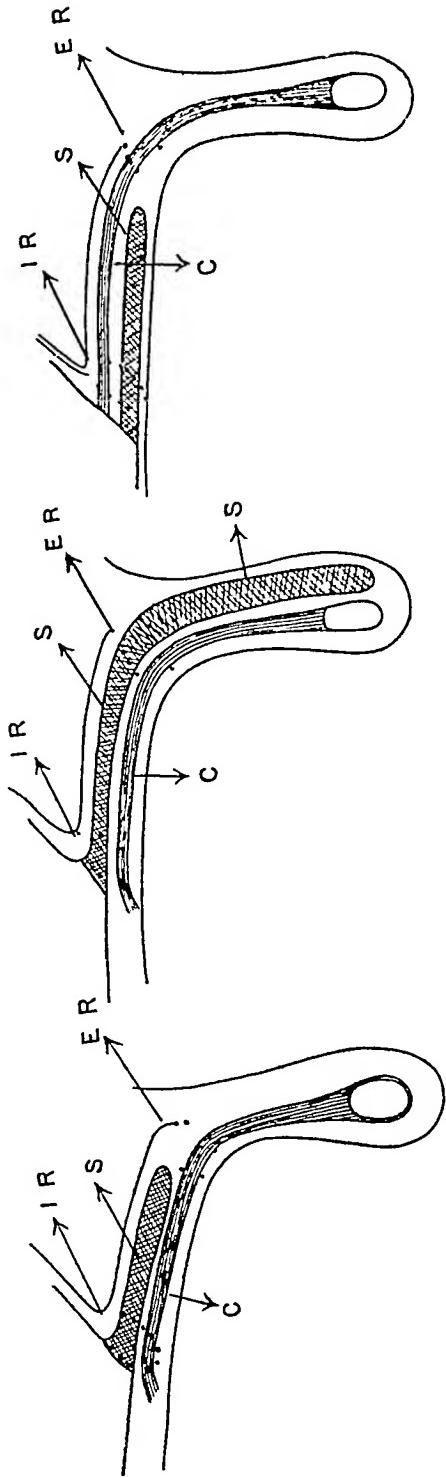


FIG. 1.—Funicular

FIG. 2.—Tunical
Diagrammatic sketch of varieties of indirect inguinal hernia

C Spermatic cord S Sac I.R. & E.R. Positions of internal and external rings respectively

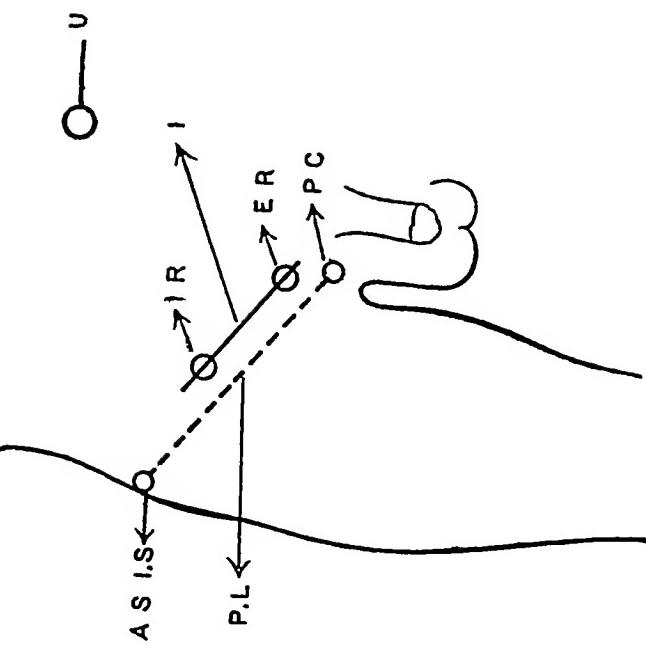


FIG. 3.—Post-funicular

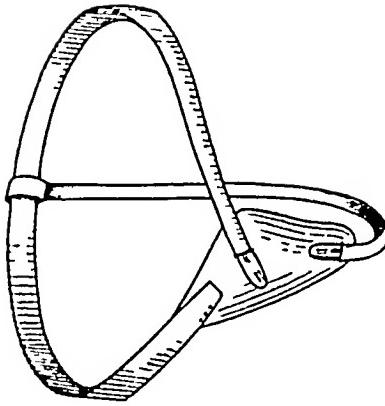


FIG. 4.—Lether supports

FIG. 4.—Diagram of position of landmarks and line of incision ASIS, Ant. Sup. Iliac Spine P.L. Poupart's Ligament P.C. Pubic crest I Incision I.R. Poupart's ring E.R. Ext. ring U Umbilicus

THE OPERATION OF ELECTION FOR THE RADICAL CURE OF INGUINAL HERNIA

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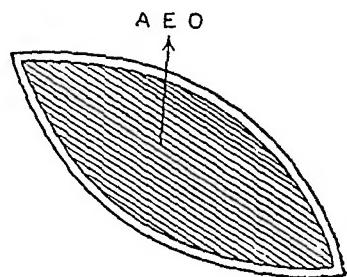


FIG 5

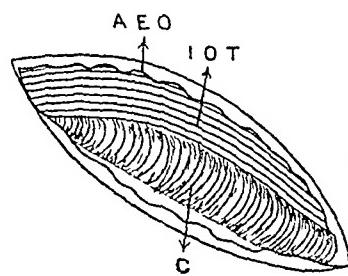


FIG 6

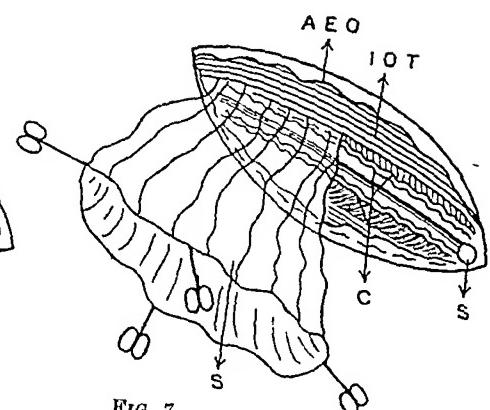


FIG 7

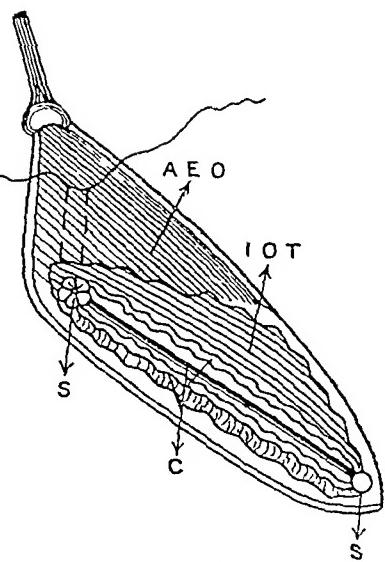


FIG 8

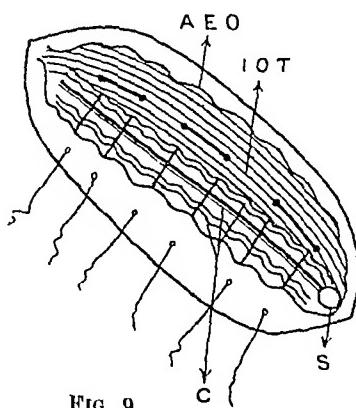


FIG 9

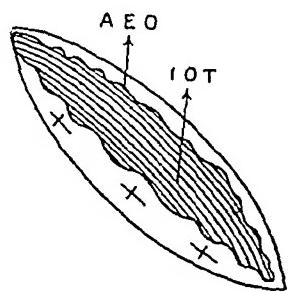


FIG 10

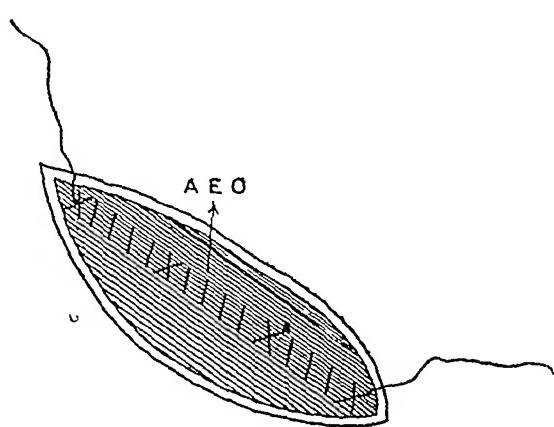


FIG 11

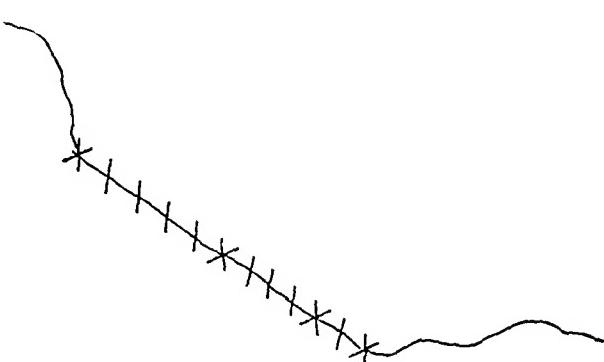


FIG 12

Semi-diagrammatic sketch of stages of Operation (right side)

Fig 5—Appearance on skin incision Fig 6—Appearance of canal on incision of external oblique aponeurosis Fig 7—Sac isolated from cord, and cut away from scrotal portion Fig 8—Sac ligatured at neck and sutures placed preparatory to drawing it up inside abdomen Fig 9—Three mattress sutures placed preparatory to closing canal Fig 10—Sutures tied, canal closed Fig 11—Aponeurosis of external oblique repaired Fig 12—Skin incision closed
A E O = Aponeurosis of external oblique I O T = Internal oblique and Transversalis muscles C = Spermatic cord S = Sac

structure. The manipulations have consequently to be conducted from beneath the edge of a certain As it is a fibrous structure, susceptible of complete repair by suturing, and of tightening if necessary by invagination, I do not think the objection carries much weight, when compared with the preponderating advantages afforded by an uninterrupted access to the canal and its contents Their methods centre on the treatment of the sac McEwen draws it up enfolded on a suture through the internal ring and anchors it inside the abdomen, while Kocher draws or pushes it up, *via* the internal ring, through a buttonhole aperture in the abdominal wall, ligatures the neck, cuts the sac off and drops the stump back The lumen of the canal is finally reduced by puckering sutures passed through it and the abdominal wall These operations are, I think, open to criticism on the following grounds 1st, that this treatment of the sac is only practicable in the funicular variety and 2nd, that the closure of the canal is necessarily less complete and thorough, than by deliberate suturing I have indeed operated on two tunical hernias, reputedly cured by Kocher's method which had recurred, or rather which had never been cured at all!

Barker, Bassini, and Halsted, ligature the neck of the sac and draw it up inside the abdominal cavity Bassini's original method, which I used to practice, aims at preserving the anatomical arrangement of the walls of the canal and its valvular action, as closely as possible, this is effected by suturing the internal oblique and transversalis muscle, to Poupart's ligament at the upper part of the canal *in front of the cord*, and the conjoined tendon at the lower part of the canal *behind the cord*, with interrupted sutures The result is good, but the manipulations are unnecessarily troublesome

Halsted, in his original method, split the muscles outwards and upwards from the internal ring and transplanted the cord into this incision, suturing the muscles round it The canal was then closed as described in the operation I practice, but *behind* the cord This leaves a subcutaneous and much exposed cord He now, I believe, covers it with the aponeurosis of the external oblique The operation is unnecessarily severe The operation I have described follows Bassini's closely, but is simpler and more easily performed, the adoption of Halsted's mattress suture is an important detail as it binds the parts together in a way in which single interrupted sutures cannot do

After-treatment —The patient must remain in bed for 3 weeks after the operation, to prevent stretching of the repaired parts before consolidation has taken place, on getting up a light leather support must be worn continuously for 3 months or more, this support, which consists of a triangular piece of leather fastened by a pelvic band and secured at its apex by a perineal strap or tape

(Fig 13), is in no sense a truss, it merely serves to take any sudden excessive internal pressures until the sac is thoroughly sound.

Results.—I have performed this operation in 50 cases during the past 3 years. Beyond slight stitch suppuration in a few cases, they have all healed by first intention and the union was firm and without impulse on coughing Four of the last 34 cases and 6 of the previous 28 cases were admitted with the hernia in a condition of strangulation or 20 per cent It is this ever-present danger of the superintention of strangulation which constitutes the one great argument for radical cure Reduction by truss I am firmly convinced, should never be attempted in a properly equipped hospital nowadays The only permissible procedure is to perform an open operation, completed by a radical cure, if the local and general conditions permit

Contra-indications —Chronic cough and extreme old age are, ordinarily speaking, the only contra-indications worth considering

Suitability —All ages and conditions are suitable subject to the above reservations In very large hernias of long standing, the gap may not be susceptible of repair by suturing and a wire filigree must be inserted instead

PREVENTION OF MALARIA IN THE TROOPS OF OUR INDIAN EMPIRE

BY P. HEHIR,

COLONEL, I.M.S.,

Offy Depy Dir, Medical Services in India

IT is proposed to discuss a few aspects of this wide subject, limiting one's remarks to the measurement of malaria in cantonments, reduction of breeding places of anophelines, relapses and their prevention and quinine prophylaxis

Malaria is throughout our Indian Empire the dominating cause of inefficiency in troops in both peace and war In peace it always heads the list of diseases in both European and Indian troops In 1913 it gave rise to 8,880 admissions with 9 deaths or 125 5 per 1,000 of strength in European troops and 12,788 with 27 deaths or 100 per 1,000 of strength in Indian troops In most of the cases which occur in troops and followers on field service the initial infection is acquired in cantonments the large majority are relapses One's personal experience is that the malaria of cantonments is to a large extent bred in the human occupants and anopheline population of cantonments.

In all cantonments and barracks we should make an enquiry into the amount of malaria present in the troops and other inhabitants, the breeding places of anophelines (especially the local malaria-bearing species), and the barracks, bazaars, and buildings which adult anopheline carriers frequent We should use a large scale map and mark on it the extent to which malaria prevails in different barracks, bazaars, etc, and the breeding places of anophelines with the species—including all collections of surface water, streams, irrigation channels and water-courses generally, areas under wet cultivation, ponds, tanks, pools, borrow-pits, artificial collections of water, small and large, stand pipes, etc The terrestrial waters and possible breeding places are best seen after a heavy shower The cantonment should be divided up into areas, the area of each unit being in charge of the

medical officer of the unit, the non regimental areas being similarly subdivided and supervised. In large cantonments when an officer with expert knowledge of malaria is available he should, under the senior medical officer, be in charge of and direct all the anti malarial measures that are being carried out. Each of these officers should have a map of his area, and keep it up to date as regards prevalence of malaria, breeding places still in existence, breeding places removed, fresh ones that have arisen, etc.

The anti malarial campaign in each cantonment should be planned after these preliminary enquiries have been carried out, and then systematically pushed from year to year.

The most accurate indication is to the prevalence of malaria in a cantonment is the *malaria index*. The most practicable indication is the *spleen index*, that is, the percentage of children up to 10 years of age with splenomegaly due to acute or chronic malarial infection. The spleen rate in troops, except in highly malarial stations, is in no sense reliable estimate as to prevalence or intensity of malarial infection—troops are usually brought under treatment and the effects of the malaria checked before the spleen attains to any great degree of enlargement.

There is a considerable amount of malaria amongst Indian children in cantonments. Of 3,884 children in various cantonments examined a few years ago on the plains in India in the 7th (Meerut) Division one found during the malarial season an average of 60 per cent with enlarged spleens, and 40 per cent with malarial parasites in the blood. The children of cantonments are the chief reservoirs of malarial parasites and the source whence a great deal of the malarial infection of troops spreads from year to year.

In every cantonment the breeding habits and bionomics of local anophelines generally should be studied and a determination made as to the species of anophelines that are natural carriers.

Fresh breeding places for anophelines are still being created in many cantonments. Hollow-pits are still being formed—in road-making, by the removal of earth for new buildings, in brick fields, rifle ranges, firing platforms, excavations for making defensive positions (trenches, etc.) during field days, or by double companies during military training, and in a score of other ways.

The chief anti mosquito measures required in cantonments embrace rough canalisation of streams, irrigation canals and water courses generally, levelling, grading, and embanking of rain water channels, ditches and roadside drains, filling up of tanks, hollow pits, excavations and depressions, covering of disused wells, covering with mosquito proof material or periodical emptying of water cisterns, filling up excavations for bullock runs, treating all small collections of water that cannot be abolished with some larvicide once a week, preventing (where possible) excavations for building purposes within cantonments, and removal of brick factories from cantonment limits, and disuse of grass farms within half a mile of barracks when these are near the breeding grounds of anophelines. The mosquito gangs of cantonments who are chiefly used for kerosining collections of surface water should be employed in carrying out much of the work. The work should be carried out systematically, the labour fairly divided amongst the men, and regularly supervised by the malaria officer, senior medical officer and medical officers of units.

The senior medical officer and malaria officer should be acquainted with all possible breeding grounds of anophelines in the extra regimental areas of the station and allot tasks to the mosquito gangs employed in these areas, medical officers of units doing the same in regimental areas.

The 'sanitary' detachment, non commissioned officers and men of all our British and Indian units are now in their annual course of instruction in military sanitation.

made familiar with the rôle of anophelines in malaria and the methods employed in reducing their numbers. These men might be utilised in the anti mosquito measures of all cantonments to a large extent. In several cantonments they have made collection of adult anophelines taken in the barracks for me, and of anopheline larvae from the surface waters. With their aid in most cantonments it would be possible to work out during a single mosquito season the anophelines in existence and the actual malaria carriers amongst these. They are, as a rule, intelligent and keen men. Apart from supervision, all they require to guide them is a sound and well considered anti mosquito scheme for the areas in which they are employed.

A great deal of the unskilled labour connected with the reduction of mosquito breeding places can be carried out by the troops themselves in their regimental areas. One has seen this done in several stations with advantage, and we have had several excellent examples of it in India and Burma during the last few years. We should remember that it is our duty to employ all the smaller and least expensive methods before recommending large schemes.

I believe it is possible to reduce the anophelines and the malaria in the cantonments of practically all malarial stations if the matter is taken in hand in a thoroughly methodical way and a continuous anti malarial policy be adopted from year to year. Patchwork and change of policy are responsible for many failures.

With the progressive decrease of breeding places of anophelines in and around cantonments there will be a corresponding reduction in the amount of quinine that will be necessary for curative and prophylactic purposes in garrisons, and the amount of labour required to keep down the number of breeding places will become yearly less.

There are many cantonments where this has actually taken place—stations in which malaria was prevalent and malignant, but in which the endemicity is now mild.

As instances of cantonments that have been vastly improved by persistent anti malarial sanitation I would mention Agra, Mhow, Belgaum, Hyderabad (Sind), Quetta, Bangalore, Cawnpore, River Forts (Rangoon), Mandalay and Lucknow.

In 1909 Agra yielded in our European troops 695 cases, in 1913 only 36 the strength remaining the same. The excellent anti malarial work that has been in progress in Mhow for the last few years has removed the necessity of issuing quinine prophylactically, the same may be said of Quetta and several other stations. There is ten times less malaria in Belgaum than 10 years ago. The River Forts, Rangoon, used to be notoriously malarial, every man going to them getting infected, this is not now the case. Mandalay used to be one of the most malarious places in Upper Burma, it has ceased to be so. In Hyderabad (Sind) in 1908 the malaria ratio was 606 per 1,000 of strength, in 1913 there were only 29 cases throughout the year.

These instances demonstrate the highly satisfactory results obtainable by the active co-operation of all the authorities concerned, combined with an intelligent scheme of anti malarial sanitation, and serious attention to the treatment of cases of malarial infection both in hospital and subsequently. The work of reducing the breeding places of anophelines is tedious, exacting and requires unremitting attention and supervision, in the absence of radical and prohibitively expensive operations it has to be carried out from year to year, the work must be uninterrupted, any relaxation will result in much of the advantages gained being lost.

Destruction of adult mosquitoes in barrack rooms is a by-no means negligible defensive agency, the collective efforts of soldiers in barracks in this respect is capable of greatly reducing the number of anophelines present. Our troops should be encouraged to do this, and small hand-nets and trap should be placed in each barrack room during the anopheline season.

We have the statement in several reports of 1913 that the punkah coolies employed in barracks were infected with malaria, in one garrison (Fort Govindgarh, Amritsar) 84 per cent of them were infected. In 1909 out of 430 punkah coolies examined I found 37 per cent infected. These men should invariably be medically inspected before being entertained and periodically examined afterwards, and they should get the same issue of prophylactic quinine as the troops, these remarks apply equally to all followers who sleep in proximity to barracks.

The keeping of European troops at non-malarial hill stations until the malarial season is over is a measure of considerable advantage to efficiency. The transfer of men severely infected with malaria to our convalescent depots on non-malarial hill stations serves the triple purpose of eradicating malaria from the individual, thereby lessening the invaliding rate for malaria, and removing infected men from malarious stations in which, through anophelines, they disseminate malaria. One has made a series of observations on the children of Indian followers of British troops moved to hill stations where there was no initial malaria and ascertained that a year's residence at such stations eliminates without any treatment 98 per cent of the malarial infections, 97 per cent of cases of malarial enlargement of the spleen in children disappear spontaneously in the same period. These conclusions were arrived at from observations made on 997 Indian followers' children in 7 different hill stations.

The detection, isolation, and specific treatment of all infected soldiers are of great importance in the prevention of malaria. Malarial patients should, during the anopheline season, be isolated in special wards and supplied with mosquito curtains. All known cases of active malarial infection should be admitted into hospital. This is very necessary, for if not carried out, the men with malaria on returning to the barracks infect their comrades and may get reinfected themselves. The great advantage of remaining in hospital is that all our hospitals are provided with mosquito nets for malarial cases, whilst nets are not universally employed in barracks. All discharged cases of malaria taking quinine curatively should get their quinine at the hospital or inspection room daily, this enables the medical officer to see them regularly. During malarial infection the object should be, not only to check the paroxysms, but also to eradicate all the parasites from the blood by the use of quinine. Relapses in soldiers, and in all other bodies of men under discipline, can to a large extent be controlled. There should be but little residual malaria in troops. Relapses occur when previous infection has not been eradicated by proper quinine treatment. All troops and followers in cantonments known to be infected with malaria should be subjected to a course of quinine treatment lasting not less than four months. Were this universally adopted there would, one believes, be fewer cases of relapses in the late winter, spring, and early summer months. The method of treating malarial fever cases with quinine for a week or so and then letting them fall into line with the men who are taking the drug prophylactically is one of the many causes of the continuance of malarial infection amongst our troops. Under such treatment the curative administration of quinine is discontinued just at the time when the patient is most infectious to others through the gameteocytes in his blood. The proper way to treat malarial fever in our troops' hospitals in India is to keep the patient in hospital and under quinine and mosquito nets until gameteocytes are no longer to be found in the surface blood, then discharge him to attend daily for his course. Generation after generation of gameteocytes and schizogonic parasites continue in the spleen and bone marrow long after they cease to be found in the peripheral circulation—it is this recurring multiplication we should aim at eradicating, until this is done the infected person is liable to relapses, that is, to recurring paroxysms without re-infection, and

also through malaria carrying anophelines, to infect others.

In a malarial cantonment during the malarial season when fresh infections are constantly liable to occur, it is practically impossible to decide whether a particular case is one of re-infection or relapse. A careful scrutiny of each case with examination of the blood, and a history of the course of the infection (if any) would probably give us information upon which we could draw inferences as to whether it was a re-infection or a relapse, but such deductions would not be scientifically reliable. The only indication of a re-infection would be a record to the effect that the preceding attack was caused by a species of parasite different from the one discovered in the blood during the attack under investigation, although this does not necessarily mean a re-infection, as the former infection may have been a mixed one and one species have died out.

Relapse is one of the most common factors in malarial infection, and the asexual cycle is that phase in the life history of the malarial parasites most frequently associated with the primary infection and with the relapse, and with one relapse and the succeeding one. Relapse frequently follows the so-called spontaneous cure of malaria, because the asexual cycle in such a case often persists in numbers that can be detected by the thick film method in the intervals of apyrexia. Infections treated with small doses of quinine will in all probability relapse, because the parasites of the asexual cycle in the spleen and bone marrow are very slightly if at all affected thereby. Relapse is less likely to occur when the infection is promptly and vigorously treated, because probably the older the asexual cycle the more resistant to quinine it becomes. When a relapse occurs with the presence of parasites in the peripheral blood during the administration of quinine by the mouth in sufficient doses, faulty absorption of the drug should be suspected (*Journal of Infectious Diseases*, May 1913, Vol XII, No 3).

These statements are based on the assumption that the perpetuation of the asexual cycle of malarial parasites in the blood, spleen and bone-marrow is the sole responsible cause of relapses and that like *Trypanosoma gambiense* and other trypanosomes in relation to atoxyl treatment in the experimental production of trypanosomiasis in lower animals, the asexual forms of malarial parasites under certain conditions take on a relative immunity against quinine. We have so far absolutely no grounds for believing that relapses are caused in any other way than by latent asexual forms of malarial parasites taking on activity and multiplying in the same manner they did during the stage of initial infection. Whether the spores of malaria become immune to the action of quinine under the conditions stated remains to be proved, but the assumption that they do gives us a definite and practical line of quinine treatment in the early initial paroxysms.

The special significance of the hypothesis rests in its application in the treatment of malaria. Small doses of quinine even in the slight infections may simply render the asexual cycle relatively immune, so that larger doses, if they had been given early in the attack might have eradicated the parasites, are later without effect. It is probable that we give larger doses of quinine given for the first 3 weeks than those usually administered during the initial infection, and progressively decreasing doses continued subsequently for the remainder of the 4 months' course, there would be considerably fewer relapses and re-infections. These remarks also emphasize the necessity of all cases of malarial fever reporting sick at once so as to get infected persons under quinine as soon as possible and thus prevent the formation of gameteocytes. Relapse cases in cantonments after the real malarial season is over are very largely responsible for the perpetuation of malaria through anophelines when the latter start breeding again.

From our reports we can measure the effect of quinine in cases treated in non-malarial hill stations. Men are

sent up convalescent from malaria for 4 to 6 months, get one relapse, are put under a comparatively mild course of curative quinine treatment for 4 months, and no further relapses occur, in 98 per cent of these cases then malaria is eradicated. In a large proportion of cases the same course of quinine treatment would not be successful in the plains, possibly because of re infections or because the asexual parasites are more immune to the action of quinine in the plains during the malarial season, or for some other yet undiscovered reason.

Our records distinctly show that in those malarious stations in which curative quinine treatment is most persistently carried out relapses are decidedly fewer than in those in which quinine treatment is adopted in a half-hearted way.

One is in possession of abundance of evidence pointing to the necessity of more continuous examination of the blood for parasites in fevers of unknown origin in malarious stations. I will quote one group of facts in support of this statement. In the Burma Division up to August 1911 a large percentage of fever cases were returned as pyrexia of uncertain origin, the practice being to rely upon a single examination of a stained blood smear for malarial parasites. From that month onwards daily microscopic examinations of the blood in all cases of undiagnosed pyrexia was carried out, quinine being withheld until malarial parasites were found in the peripheral blood. Over nine thousand slides were examined in connection with 750 infections. In one case parasites were not found until the 8th day, in 2 on the 7th day, in 5 on the 6th day, in 4 on the 5th day, in 11 on the 4th day, in 43 on the 3rd day, in 127 on the 2nd day, the remainder on the first day, in other words, in 25.86 per cent of proved malarial infections parasites were absent during the first paroxysm. In two Indian battalions quartered in Mandalay, which used to be a very malarious cantonment, six months after the adoption of this change, the place of practically all the cases of pyrexia of uncertain origin was taken by malaria in the returns. A similar series of facts were recorded in the 6th (Poona) Division in the last quarter of 1913.

The records of our military hospitals show that frequently malarial parasites are not found in the peripheral blood during malarial paroxysms. The chief reason given for this failure to discover parasites is that the patients are at the time taking quinine prophylactically. One is, however, quite convinced that when malarial parasites are in sufficient numbers in the blood to give rise to malarial paroxysms, they can in the large majority of cases be found in the peripheral blood, especially if the thick film method is employed and quinine is temporarily withheld.

The practice of giving quinine to cases where malarial parasites are definitely known not to exist is unsound therapeutically. One great disadvantage of giving quinine in cases of doubtful fever is that after its use the diagnosis of the case may never be cleared up. When all evidence shows that there are no malarial parasites in the peripheral blood, abstaining from giving quinine can do no serious harm to the patient in the vast majority of cases. It sometimes happens that the disuse of quinine in such cases for some days enables the diagnosis to be settled by parasites appearing in the finger-blood. Although we know that quinine is a specific in malarial infection, the fact that its use brings about the disappearance of pyrexial phenomena does not prove that the fever is malarial. Quinine is an antipyretic, apart from its plasmocidal properties. I consider that as a routine practice no case of fever should get quinine until malarial parasites or other changes in the blood, or definite clinical manifestations, indicate that the case is one of malarial fever.

Papers have in recent years been published antagonistic to the prophylactic use of quinine, and in several annual reports of garrisons of 1913 the utility of this procedure is questioned. The failure of quinine as a prophylactic of malaria is due to improper dosage, defective methods of administering the drug, postponing its

administration too long, or using it in prophylactic doses when it should be given curatively, usually the last named is the cause giving rise to disappointing results, and the ultimate defect will in most cases be found to be a want of completeness in the method of diagnosing actual cases of existing malarial infection. Prophylactic doses of quinine do little or no good when malarial infection is already present, it may possibly be instrumental in creating resistant strains of malarial parasites which perpetrate the infection in the individual and thereby through him lead to dissemination of the infection.

In many stations the mistake is made of not beginning the prophylactic issue of quinine sufficiently early, for one reason or another this issue is postponed until the incidence is seen to be rising rapidly. Under this circumstance a fair percentage of men in barracks are already infected, and through anophelines, infect one another. The cases where the infection is latent do not of course report sick, but they are reservoirs of the parasites that enable anophelines to disseminate the malaria. Prophylactic doses of quinine in such cases is, if anything worse than useless, infection has already occurred and curative doses are required, prophylactic doses possibly harden the parasites to the effects of quinine, and the reputation of the drug by this mistake suffers in two ways.

When all cases of malaria in units are admitted, and such admissions reach 2 per cent of strength, I consider the prophylactic issue of quinine is justifiable. The longer it is delayed after this the higher will the percentage of fresh infections become during the malarial season. There are circumstances when a prophylactic issue should be made irrespective of the percentage of admissions, e.g., in barracks where mosquito nets are not in use and when there is a sudden rise in the malaria of the civil community around. Assuming a uniform distribution of cases in barracks, any greater percentage than 2 means that one man in each barrack is infected, and that through him in the presence of anophelines malaria will rapidly spread. If time permitted I could quote several instances in which five or six men occupying parallel and consecutive beds in barrack rooms suffered from the same type of malarial infection, the other men escaping, and one instance in which 13 of 24 men in one room suffered from malignant tertian, the other 11 remaining healthy, and in the adjoining room 9 of the 24 occupants suffered from benign tertian, the other 15 occupants being unaffected by malaria in any form. Under ordinary circumstances in non-epidemic years, however, such spreading of malaria does not occur through cases in the barrack room of European troops, but through the infected anophelines from married quarters, bazaars and followers' huts invading barrack rooms.

The effect of the percentages of cases of infection in influencing the incidence of malaria may be seen in every endemic malarial station.

One's personal experience is that the best prophylactic dose of quinine during the malarial season where malaria is comparatively mild is 5 grains daily, where it is severe 5 grains daily for six days and 10 grains on the seventh day weekly, and where it is very severe, 5 grains for six days and 15 grains on the seventh day weekly.

Many factors interfere with the reduction of malaria in cantonments—indifference of the persons infected, want of enthusiasm of those guiding anti-malarial operations, absence of concentrated effort and of universal co-operation in the measures, and especially, absence of funds necessary to make these measures radically useful. All who are familiar with the difficulties inseparably associated with prevention in endemic malarial cantonments must allow that it is always a heavy task from which there can be no remission.

Given a limited endemic malarial area to deal with, such as we have in a military cantonment in India, and

unlimited funds, any trained tropical sanitarian would be able to formulate a scheme for the reduction of malaria. But these are conditions that are not in existence. He is the best military sanitary officer who can make most use of the practicable preventive measures at his disposal in cantonments.

In the prevention of malaria in cantonments we should avoid counsels of perfection, we should employ as many of the known preventive measures as are practicable. The best anti-malarial results so far have been obtained in places where all preventive measures have been put into operation more or less simultaneously, and continued over a long period. Some anti-mosquito campaigns have erred in dealing first with large or extensive and difficult projects instead of the cheaper and easier ones. The average malarial intensity of a locality depends on many factors, such as the number of children who harbour malarial parasites, the number of infected anophelines, extent to which individual prevention is practised, etc., so that the cause of the failure may not be always easy to ascertain. To get rid of malaria in any particular locality by artificial means may take several years. It is impossible to give the details of the measures to be adopted in all cases, these have to be determined by local circumstances, in some places all measures may be adopted, in others only a few are possible. In intensely malarial areas, in many cases, do all that is reasonably possible and malaria is not mitigated.

TREATMENT OF CHOLERA BY THE INTRA PERITONEAL INJECTION OF IODINE

BY J. J. A. BRACHIO,

LIEUTENANT, I.S.M.D.,

Civil Surgeon, Birbhum

BEING encouraged by the effects of Iodine in a few isolated cases of cholera some months back, I decided to try its effects more fully, when an epidemic of rather a virulent type broke out along the eastern border of this district, towards the early part of the year. The results were so gratifying that I venture to publish my experience for the benefit of those interested in the subject, and any others who may be disposed to give my suggestion a further trial.

As everybody is aware, treating a patient in a village hut, at a remote corner of a district, is very different to working up the details in a hospital ward. I had hoped to present my method with more details, but unfortunately cholera is not very common in the head-quarters of this district, so to waste no further time, and with a hope that the suggestion may be developed by any worker who has better opportunities, and nursing facilities at his disposal, I present my notes as they are.

The bare facts are just these. I divided my experiments into three methods, viz.—

I A Mixture—consisting of—

Tinct Iodine	m 10
Acid Sulph. Dil	" 10
Tinct Digitalis	" 10

ad oz 1

one ounce for a dose for an adult every four hours

2 A pill consisting of—

Iodium	gr. $\frac{1}{4}$
Ext Gentian	q.s

one pill for an adult 3 or 4 times a day

3 An Intraperitoneal injection, consisting of—

Iodium	gr. $\frac{1}{4}$
Pot Iodid	" $\frac{1}{4}$
Aqua Distillata	m 20

Twenty minims constitutes one complete treatment for an adult.

As this method of treatment was purely experimental and as I did not wish to bind my cholera doctors to any hard and fast sad of mine, the instructions to them were that they were to use their own discretion as regards treatment of the cases, according to the most approved and accepted lines, but that I wished them to select one village or one locality where the disease was fairly bad, and treat the patients exclusively with the above mixture, supplementing it where necessary with Adrenaline solution in ten drop doses on the tongue, every hour when required as a cardiac stimulant and a diuretic.

One doctor reported 30 recoveries out of 40 cases treated, another reported 7 recoveries out of 11 cases treated, thus giving roughly 75% of recoveries. My *sadai* Sub-Assistant Surgeon tried the mixture in three cases and recovered.

Re No 2, the Iodium pills—I supplied these to a police officer of a thana for which there was a delay in securing a doctor. This officer reported most favourably on the efficacy of the pills, and said he found them very convenient, that they answered much more satisfactorily than the old cholera pills and made several demands and was supplied with several hundred.

Re No 3 Method—Considering this method somewhat diastic, and requiring some care, and one which might have been associated with some risk, I decided to use it myself at first, until I was quite certain of my grounds as to whether it was to be persevered in, and what the exact technique was.

The first case tried in was a boy of about ten. He was absolutely pulseless at the wrist, with high fever, restlessness, purging unconsciously, and with suppression of urine for about twelve hours. Thinking that the boy must surely die, and I would not be running much of a risk, I gave him an injection of 15 minims into the peritoneum, and dropped ten drops of Adrenaline on his tongue, and left instructions as to his feeding. I was most agreeably surprised next morning when it was reported that this boy had passed urine, that his diarrhoea had ceased, and, on the whole, there was a good deal of improvement, which I afterwards verified for myself. One out of four others in that same house, who I thought very bad and who would not allow me to inject, died that night. These four were treated with the Iodine.

mixture, of which three recovered. Being encouraged by the results of the first injection, I persevered, and friends and relations of some of those stricken used to meet me as I entered their village and beg of me to give the needle.

My method was as follows. Having scrubbed a small portion of the skin of the abdomen just above the caecum, with a piece of antiseptic wool, and painting the part with tinct. iodine, I injected 20 drops of the above solution with an all-glass hypodermic syringe and needle, by gripping and pulling up the abdominal wall as high as possible and driving the needle at right angles to the wall right down to the hilt and squirting its contents into the cavity.

Of all three methods the injection impressed me most favourably, as may be judged from the following list of cases which speaks for itself.

In almost all my cases the above treatment was supplemented with a very free use of Adrenalin, by dropping the solution on the tongue, as it was quickly absorbed and nothing was lost in the event of vomiting.

I found the iodine in either the mixture or injection form had a marvellous effect on the vomiting.

*Statement showing the cases treated by the
Intra-peritoneal Injection Method*

No	Name	Day of attack	Condition when seen	Results
18	Pasupati Konai	2nd	Feeble pulse, vom, purging, suppression	R
19	Kamini Konaini	3rd	Do	R
20	Danpati Napit	2nd	Pulseless, purging, suppression	R
21	Nevoreh Majhi	1st	Feeble pulse, P. V Supp	R
22	Guu Dassi	3rd	Unconscious, fever, Supp	R
23	Gau lunga Muchini	2nd	Feeble pulse, V P Supp	D
24	Infant	1st	V P feeble pulse	R
25	Sisubala	1st	Feeble pulse, V P Supp	R
26	Khudu Mondalini	2nd	Do	R
27	Bejoy Basanta	3rd	Unconscious, pulseless	D
28	Palin Konai	3rd	Do	D
29	Palin's Infant	1st	Feeble pulse, V purg	R
30	Musamut Kazi	1st	Feeble pulse, V P Supp	R
31	Rasik	2nd	Collapsed, V P supp	R
32	Satis Das	1st	Feeble pulse, V P Supp	R
33	Balya Konai	1st	Thready pulse, V P Supp	R
34	Abdar Mondal	1st	Fair pulse, V P supp	R
35	Banwari Mondal	1st	Feeble pulse, V P & Supp	R
36	Sanyasi Kanai	2nd	Ditto	R
37	Amir Hussain	2nd	Fair pulse, V P	R
38	Durga Muchi	2nd	Feeble pulse, V P Supp	R
39	Gulish Bagdi	1st	Pulseless, supp	R
40	Badi Muchi	3rd	Collapsed, supp	D
41	Dukhi Mal	2nd	Feeble pulse, V P Supp	R
42	Jetu	1st	Thready, V P supp	R
43	Janadulla	2nd	Feeble pulse, V P Supp	R

No	Name	Day of attack	Condition when seen	Results
1	Radhi Muchini	2nd	Fair pulse Vomiting, Purging, Suppression	R
2	Gagan's daughter	2nd	Do	R
3	Saraswati Muchini	1st	Feeble pulse, V P Supp	R
4	Muluram	3rd	Collapsed, unconscious, no vomiting Purging and suppression	R
5	Nirgan Muchini	2nd	Feeble pulse, V P Supp	R
6	Gaura Muchini	2nd	Feeble pulse, V P Supp	R
7	Susila	1st	Feeble pulse, do	R
8	Rajani Konai	3rd	Collapsed, unconscious	D
9	Purandon Konai	2nd	Pulseless, restless, vomiting ceased, purging and Supp	R
10	Chaman Bagdini	2nd	Collapsed, delirious, suppression	D
11	Hemu Bagdini	2nd	Feeble pulse, purging and suppression urine	D
12	Mohesh	2nd	Do and vomiting	R
13	Kofilla Konaini	1st	Do	R
14	Litia Malini	3rd	Collapsed No vomiting, purging suppression	R
15	Sarapati Malini	2nd	Pulseless, delirious, suppression, no vomit, nor purging	D
16	Makhan Malini	3rd	Pulseless, fever, unconscious	D
17	Sabadha Mistrini	2nd	Pulseless, purging and Supp	R

In all the above cases I only gave one injection. Perhaps a second might have saved the lives of some that died, but unfortunately I was not able under the circumstances as I had to move on to another village and was only able to come back to the last perhaps on the second or third day. Therefore I found it difficult, and hope that any other worker who is able to treat his patient in a well equipped hospital with the facilities of constantly and carefully watching his patient, and giving him the benefit of good nursing, will be able to develop this treatment which so far is in a very crude form.

The points in favour of it—That for an epidemic it seems to be so convenient. All that is needed in the shape of an outfit is a bottle of the solution. An all-glass hypodermic syringe, a bottle containing a 50% sol of acid carbolic acid in tincture of iodine, and a packet of antiseptic wool, and a small gallipot. The gallipot is used to contain a quantity of tincture of iodine with carbolic acid into which the needle is dropped after use, until it is required for the next injection.

One note of caution I should like to give. That though I have never broken a single hypodermic needle in the thousands of injections that I have given previously, I broke three one

morning. Thus my suggestion is that more care must be taken when using the iodine solution than with an ordinary injection.

I might also add my reason for having selected to use the aqueous solution instead of the tincture of iodine, was because I believe the tincture would cause a great deal of burning and perhaps inflammation as used to be evidenced in injections of iodine after tapping a hydrocele. One little boy of about ten, being asked on the third day after the injection while he was playing with another as to how long the injection burnt him replied that it just hurt for a little while, and that he had almost forgotten about it.

One of the cholera doctors injected sixteen cases, of these ten recovered. Another reported having treated 52 cases, of which 45 recovered. As most of those latter cases were towards the end of the epidemic in that locality they might have recovered under any treatment.

A Minor of Hospital Practice

SOME CASES OF INTESTINAL OBSTRUCTION

BY C BRODRIDGE, B.S.,
CPT., I.M.S.,

Medical Officer in charge, Civil Hospital, Secunderabad

THE following five cases which occurred recently appeared of sufficient interest to report.

The first three cases are three consecutive cases I was called to see at the Station Hospital, Secunderabad, in a period of a few weeks. Each case turned out to be acute obstruction due to a band which in itself is an extraordinary coincidence.

C W, a gunner, was admitted to the Station Hospital from camp. I saw him on 17th December 1913. There was a history of acute abdominal cramp for 3 days with absolute constipation and severe vomiting for 48 hours. Examination showed the abdomen very distended, rigid, the general condition one of collapse with a small rapid pulse and an abdominal facies. Enemata had been given without any result.

The patient had been operated on a year previously for appendix abscess, a condition from which he recovered and returned to duty.

The abdomen was opened at once in the middle line below the umbilicus. The cæcum was found empty, but there was a large amount of greatly distended and congested small bowel; by taking this and drawing it towards one end a constricted part was found high up in the ileum, a thin band was felt running down deep in the abdomen to the appendix region, this gave way before the exploring finger, the intestine, however, was still

not free, and on searching another hand was found and divided. The constricted intestine appeared too distended to trust it in the abdomen, so a small rubber tube was sown into it, the edges of the intestinal wound being inverted round the tube as a chaly-cystostomy.

The patient passed a good night with a free escape of flatus and loose motion from the rectum. The tube came out three days later—the intestinal fistula closed in 11 days and the patient made an uninterrupted recovery.

Case 2—I was called to see Captain X of the—Diagoon Guards at 4 A.M. on the 24th January. The patient had been operated on 5 years previously, the appendix having been removed at an interval operation since when he had been quite well until the 21st January, when he suffered from severe abdominal cramp. This passed off on the 22nd after an action of the bowels. But becoming worse again in the evening of that day he was admitted to hospital. His pulse at this time was 48. The colic continued during the night of the 22nd and he vomited once. The next day he passed a small motion after an enema. He vomited again once during the day and by the evening his pain had gone. It recurred, however, during the night and I was sent for to see him. When I first saw him the colic was easier again. The pulse was 50. There was no vomiting, nausea nor fever. The patient and his abdomen both looked well. The pain was referred to the epigastrium. There was no abdominal tenderness or rigidity and the abdomen moved well. The patient however seemed sure he had not passed flatus since coming to hospital. I decided to leave the patient and see him again at 8 A.M. by which time the patient was still free from pain, there had been no further vomiting. The pulse was 52. I again left him to see him at 3 P.M. when there had been still no vomiting and only slight occasional cramp, but still the patient stated he had passed no flatus in spite of a turpentine enema. I ordered the patient some tea, bread and butter and said I would see the patient at 7 P.M. At this hour severe abdominal cramp had recurred with epigastric pain, but no vomiting. The abdomen showed no signs of distention but still no flatus had been passed. The pulse was good at 52, as the colic was so severe and the history of absolute constipation so definite, I decided it wise not to let him go through the night without having his abdomen opened. On opening the abdomen a band was soon felt running deeply down to the right iliac fossa. The band was divided freeing about a foot of small intestine which was congested but only slightly distended. It was replaced and abdomen closed. While sewing up the abdomen the patient passed flatus. He healed by first intention and left hospital on the 21st day.

Case 3 — I was called to private X of the—Dragoon Guards at 11 P.M. on 5th February 1914

History — The patient had reported sick for gripping abdominal pain and vomiting on the evening of the 3rd. His bowels had been opened that day. On the fourth the pain became worse and slight vomiting continued. The bowels were opened after an enema. The patient's general condition became worse on the 5th and I was sent for. On examination the patient looked ill and anxious and his pulse was 124. He had been vomiting at fairly frequent intervals. He could not be quite sure about not having passed flatus. His abdomen was slightly distended and tender at the right hypochondrium. The patient's was clearly an acute abdomen and so laparotomy was done at once, and a band found attached at one end to a calcareous gland and the other end to a piece of small intestine. The band was very deep and was discovered by reading the distended small intestine until the anchored end was found. In trying to get a finger under the band to divide it, it gave way at the end attached to the intestine, tearing away a piece of the peritoneal cord. The place of attachment to the intestine was invaginated in the transverse axis of the bowel. The intestine was safely returnable, so the abdomen was closed. The patient made an uninterrupted recovery.

Remarks in above cases — From experience in these cases I think the quickest way to find the cause of obstruction when there is a coil of distended and congested bowel, as happened in all these cases, is to reach the coil at once and not to waste time in feeling about to examine other regions. Another point is, after division of the band one should see that the whole of the congested intestine is free, as a band may stretch between two points and be adherent to intestine or mesentery between these two attachments as happened in the first case, so that the band must be divided twice to free the intestine. Another point is, when the bowel has to be drained the advisability of invaginating one's tube so as to allow of rapid healing of the fistula. The fistula in case 1 closing in 11 days.

The comparative freedom from vomiting in case 2 was instructive, as was the marked spasmodic character of the pain.

Cases 2 and 3 showed very similar conditions of intestine, while the constitutional effect in case 2 was not enough to send the pulse up to 72. In case 3 the patient was very ill, with pulse 124.

The gripping character of the pain was common to all the cases, while the passing of motion after the enemata in the absence of the natural passage of flatus should not be allowed to deceive one as to the absence of obstruction.

Case 4 — S. M., Musalman, aged 40, was admitted to the Civil Hospital, Secunderabad, on 18th November 1913, with a history of absolute consti-

pation and retention of urine for 48 hours, while there had been irregular vomiting for 24 hours; temperature 99°, pulse 84, small. The abdomen was very distended and tympanitic, nothing abnormal was felt per rectum. A turpentine enema was given without result. Catheter was passed and only 2 oz of urine drawn.

On opening the abdomen below the umbilicus, the abdomen appeared to be filled with very greatly distended large intestine. There proved to be a volvulus of the sigmoid, the proximal and distal ends of which were approximated by a band running between them in the mesentery which no doubt had predisposed to the condition. This was divided and the distended bowel stitched to the central wound and a Paul's tube inserted.

The patient did well, but the faecal fistula did not close, there being some prolapse of the mucous membrane.

On 5th February 1914 the patient having been anaesthetised, the fistula was stuffed with gauze and the skin edges sewn up. The abdominal skin was then thoroughly cleaned and an incision made extending upwards from the fistula. By dissection one was able to open the peritoneal cavity above adherent intestine and with one's finger separate the adherent intestine from the anterior abdominal wall nearly down to the fistula. A similar manœuvre was carried out below the fistula. The two ends of the incision near the fistula were united by semi-circular incisions around the fistula and with a finger in the abdomen it was easy to excise the fistula and deliver the sigmoid with a small island of abdominal wall containing the fistula attached to it. The fistula was then removed and the resulting hole in the sigmoid sutured in the transverse axis of the bowel and the abdomen closed. The patient did well for some days, then developed a stitch abscess which healed on removal of a piece of silk. He had also developed an acute attack of dysentery which yielded to emetine and he was finally discharged quite well on 7th April 1914.

Case 5 — D., an Indian girl, aged 4, was admitted to Civil Hospital, Secunderabad, on 30th March 1914, with a history of relative constipation for two weeks and absolute constipation for 2 days during which time there had been slight vomiting. Examination of the abdomen showed a sausage-shaped tumour, moveable, about 3 inches long, lying transversely just above the umbilicus.

Examination per rectum gave no further information. There was no history of passing of mucus or blood. Enemata gave no result. The abdomen was opened and the lump was found to be a piece of small intestine three inches long so tightly packed with round worms that it appeared quite white and absolutely obstructed. The intestine was opened longitudinally along the anti-mesenteric border and 71 round worms were removed.

The longitudinal incision was closed transversely and the abdominal wound sewn up. Recovery was uneventful except that as the result of santonin 25 more round worms were passed, the child leaving hospital on the 16th day.

I have to thank Mr. Iswariaya, M.B.C.M., my Resident Assistant Surgeon, for his assistance with the notes and the care of the last two cases.

CASE OF SUSPECTED ADDISON'S DISEASE AGGRAVATED BY ASCARIDES LUMBICOIDES AND HYSTERIA

By MILITARY ASSISTANT SURGEON PIRCI
S BEDELL, I.S.M.D.,

Medical Officer, Police Training College, Sardah

This case is reported by kind permission of Major M Mackelvie, I.M.S., Civil Surgeon, Rajshahi, as it may be of interest to your readers.

HIMAPRABHA, Hindu female, aged 32 years, while seated taking her food at 9-45 A.M., on Wednesday, the 13th May, 1914, suddenly fell down in a faint and became insensible. Five hours later I was called to see the case. The patient was lying on a bed in a stupefied state and was more or less unconscious. No injury was elicited. Epilepsy, heat-exhaustion, heat-stroke or poisoning were not accountable for the coma and syncope.

On examination the pulse was small and irregular, respiration quiet and tranquil, the patient seemed in a deep sleep. Temperature normal. Ptosis of both upper eye-lids, pupils normal, breath somewhat foul, nausea occurring frequently but nothing vomited though dyspnoea at the time very marked, difficulty to open the mouth, but the trismus was not like that of tetanus as with some perseverance the mouth could be partially opened by the aid of a spoon.

On enquiring into the present history I was informed that two days previous to the attack the patient endured much fatigue on account of preparations for a feast given in the house, and on the day of the attack she had been doing some cooking by slow wood-fire.

Family History—No history of tuberculosis, father died of cholera, mother healthy and grand-mother still alive, aged about 90, brothers and sisters always well, children both healthy.

Previous History—About 5 years ago the patient is said to have had a similar attack which lasted five or six hours. Ever since recovery from that attack patient is said to have complained of gastro-intestinal disturbances, frequent headaches, backaches with nausea and sometimes vomiting, small appetite, subject to constipation, with regular attacks of syncope lasting half an hour, sometimes longer and sometimes only of a few minutes' duration, asthenia being a marked accompaniment of these symptoms. Pigmen-

tation never noticed and not elicited in my examination though the skin of the face appeared to be more or less yellow in colour, jaundice absent. Some history of being of a neurotic temperament.

1st day—Marked attacks of dyspnoea preceded by nausea occurring every 10 or 15 minutes, pulse small and irregular, respirations normal. Dysphagia on attempting to swallow, the most marked symptom of all being insensibility with loss of reflex of eye muscles. Ammonia was first applied to the nostrils and when continued the nausea was aggravated and respiration impeded and pulse seemed to get worse. Strychnine hydrochloride 1/60 gr with ether in it was given hypodermically. The pulse gradually improved and respiration was quite calm and apparently normal. Abdomen resonant and distended. This condition was relieved by a large soap and water enema, a foul and constipated stool, with very hard faecal masses, was brought away, the bowels washed, a nutrient enemata was next given, a large quantity of urine was passed and the patient remained all night in a comatose state without any alarming symptoms. Strength was maintained by nutrient enemata every four hours.

2nd day—Patient much the same, disturbed by the use of ammonia. The Civil Surgeon of Rajshahi, Major M Mackelvie, I.M.S. was called in consultation and the diagnosis pointed most favourably to Addison's disease of which there seemed no doubt. However, the stomach was freely lavaged with soda bicarb solution, nothing perceptible in the evacuated stomach contents. A mustard plaster 6' x 6' was applied to the praecordia for 10 minutes, the bowels washed and stimulated with strong coffee and brandy. An injection of strychnine hydrochloride and digitalin was next given, followed two hours later by an injection of adrenalin chloride. Nutrient enemata were continued, reflexes of the eye muscles began to return and the patient was now more or less semi-conscious, later in the evening the patient whispered in response to a question as to where she felt pain no change in the pulse or respiration, the patient passed an uneventful night.

3rd day—On Friday, the 15th the patient continued much the same, showing no signs of marked improvement, progress being very slow, the patient was able to flex her legs for the first time. Two pints saline was injected per rectum after the bowel had been well cleaned. Nausea still continued and a mixture of bismuth and acid hydrocyanic with mucilage were tried every hour to check this symptom. Dysphagia was still present. I proposed to use the stomach tube again to-day, but the patient seemed to have awoken from her slumbers and began to ask for water in a low tone, repeatedly saying "jol,"

"Jol", the patient being much more conscious than the previous day. She was informed that the stomach tube would be used whereupon the patient stated that she could swallow alright. Bailey water was tried and the patient drank one ounce of it without any dysphagia, nausea or dyspnoea accompanying the act. After this the patient showed a marked improvement in deglutition, though most of the time she remained in a sleepy state. Later in the day she was said to have had a convulsive attack accompanied with delirium which lasted about an hour. Small quantities of essence of chicken and bailey were given by the mouth and nutrient enemata continued. The adrenalin injection was repeated, the mixture for vomiting continued and no other treatment was indulged in. The patient was much better than on all the previous days and passed the night peacefully.

4th Day—Patient markedly better. Could now recognise faces and answer to questions though most of the time she preferred to remain undisturbed. During the day a convulsive attack similar to that on the previous day was reported to have occurred, but I did not witness either. The use of ammonia was encouraged and stimulants kept up. No other treatment was given. Salines per rectum and injections all omitted. At 5 P.M. the patient had a severe attack of vomiting and two nematodes—(*viz.*, *Ascaris Lumbricoides*) were expelled in the vomited matter—one 7 inches long and the other measured 14 inches. This possibly was to account for the persistent nausea. No time was lost in attending to this new symptom so santonin gr. iii, calomel gr. iii and glycerin one drachm was administered in the form of a paste before the patient retired.

5th Day—Patient was given a saline purge early in the morning. Later on a motion was passed but no trace of any more ascarides was visible. The patient was said to have had 3 or 4 convulsive attacks during the day. About 7 P.M. she became quite conscious, spoke to all her relatives in turn and complained of hunger. Fluid diet was continued.

6th Day—Patient was quite convalescent, was kept quiet in bed and fluids continued, medicines were discontinued as she objected to taking any.

7th Day—The patient had another convulsive attack though none the worse for it. I was never present at any of these reported convulsions.

8th Day—Santonin was again given, this time in combination with castor-oil emulsion with splendid effect, about 20 or 30 ascarides lumbricoides being expelled in the stool.

The patient is now quite well, though she does not perform her domestic duties as she gets occasional attacks of syncope and is more or less asthenic.

I am of opinion that the case is one of Addison's disease and that hysteria and the round worms have taken an active part in the performance. A great deal of the trouble was probably due to auto-intoxication and the belief in the theory of the Oriental physician (Kahnaj) is probably much in favour of *ascaris lumbricoides* setting up the auto-intoxication in the condition known as *Chemibhan* (Bengalee), which may be said to be the correct diagnosis of the disease. Unfortunately much stress is not laid on the symptoms set up by this nematode in our English text-books on medicine. However the picture presented is very much in accordance with Osler's description of Addison's disease and that is what I suspected the case to be, though the only symptom that may be said to be wanting was "Pigmentation of the Skin". The case being of exceptionally rare occurrence I think it worthy of record and it may be an impetus for further work on *ascaris lumbricoides* which I believe to be a much more common disease in India than Addison's disease.

A NEW PEDICLE SUTURE

By T. H. FOULKES, F.R.C.S.,

LIFUT COL. I.M.S.,

Mysore

The methods of applying an interlocking suture as described ordinarily in text-books are sometimes difficult to carry out in practice. One is apt too at about the third loop to twist the wrong end, thus spoiling the whole suture. This may not happen in the case of those who use the suture with great frequency, but with most general surgeons it is only occasionally that the need arises then when suddenly confronted with the necessity of applying it, if one has not forgotten it entirely, the mistake mentioned above is quite likely to be made.

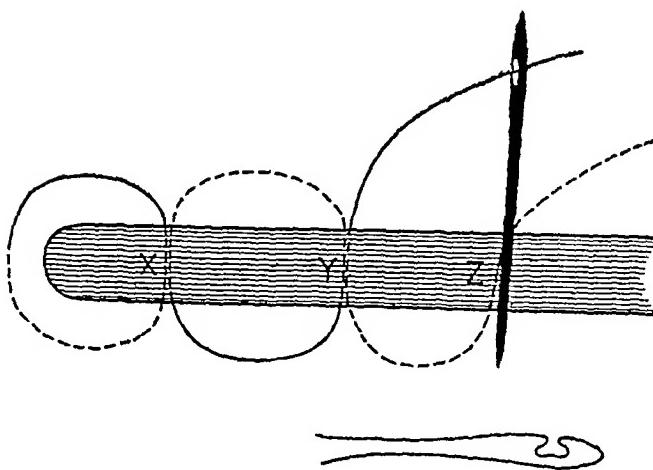
As a result of having made this error myself, I devised the suture to be described as a substitute and have now used it often—mostly for tying off the large lumpy masses of omentum so often met with in old hernia sacs. It is very simple and reliable and can be applied in less than half the time taken to do the ordinary interlocking suture, and, as far as I know, it has not been 'devised' before.

Various instruments may be used for the application, I use a special blunt pointed needle which I had made for the purpose. This needle has its eye near the point and is practically a herniotomy needle with one side of the eye filed out making it into a double hook. This is the most convenient instrument but, as will be seen, a pedicle forceps or even a sinus forceps will serve quite well, only if these be used care must be

taken to pick up plenty of slack or the thread will be frayed in pulling it through the pedicle.

The ligature may be applied in two ways according to the thickness or vascularity of the pedicle to be treated. In the first place, with a pedicle that is thin and only moderately vascular it is applied as follows—

A length of suture material—I use silk—roughly double the length of the width of the pedicle, is taken and arranged round the neck of the pedicle at the level at which it is to be tied, it is doubled round the root of the pedicle so that it lie in two equal lengths one on each side—like a hairpin, then beginning at the loop end, the thread nearer the operator is hooked up by the needle and pushed through the selected spot in the pedicle, the thread is slipped out of the hook and the entire length of this side thread is pulled through and left on the far side. The other thread is now hooked up by the needle and pulled back through the same hole its whole length also being pulled through. Another spot further along the pedicle is then chosen and the process is repeated, and so on the threads crossing each other a number of times according to the nature of the pedicle until the further end is reached. The two ends are now drawn on and the neck of the pedicle is pulled in like a concertina. When drawn tight enough the ends are tied.



The rough diagram above should make the deficiencies of description clear. The needle is shown having pushed one thread through and being about to withdraw the other through the same hole at Z, previous crossings having been made at X and Y. Of course, in practice the loops are not left slack as shown. The two halves of the thread are differently marked for the sake of clearness. This could of course be done in use, but there is no need for it, as a mistake between the two threads need hardly be made even in the dark.

Next, if the pedicle is so thick that it is not considered safe to ligature it in this way, a slight modification makes it quite safe and takes

very little more time. The ligature is arranged round the pedicle in the same way as described above, the nearer thread is pushed through a selected spot, unhooked and pulled entirely through, also in the same way. The needle is left *in situ* while the two lengths of thread are tied with a surgeon's knot as tightly as possible on the further side of the pedicle, thus tying off the packet of tissue at one end. The needle then hooks up either thread—it does not matter which—withdraws it through that same hole and takes it through again further along the pedicle where the process is repeated, each time care must be taken that the needle remains in the hole made until the threads are tied so that the thread may be brought back through the same hole.

It will be seen that this amounts to tying off the pedicle in sections, but it has the advantage of being done very rapidly, each knot tends to tighten the previously made knots and there are no scraps of tissue left to ooze between each bundle of tissue. There is also less likelihood of the knots slipping off if the pedicle is inadvertently cut unduly short.

Various combinations of the two methods can be used according to the nature of the pedicle, either all crossings or all knots or a series of crossings and knots alternately.

CASE OF ABSENCE OF UTERUS

By MISS B. K. CHOWDRY, M.B.,
Lady Porter's Hospital, Bulandshahr

17th April 1914.—A patient, named Dhapo, Hindu female Jat by caste, admitted herself to the Lady Porter's Hospital for treatment of Amenorrhœa since the age of her puberty, and for sterility. She was married at the age of 12, eleven years ago.

Family history.—No parents living, she had one brother (dead). Two sisters, both married, one has children, and the other had none, although married for 20 years.

Personal history.—General configuration of the body

General appearance.—The patient has a peculiar expression, as if something is wanting in her appearance. She has not a feminine face; she has more of masculine features, but no down on chin or lip. Hair short, voice deep, breasts of middle size with small areolæ. Her measurements are as follows—

Height	62"	Weight	7 stone 6 lbs
Measurements of Shoulders			35"
"		Busts	29"
"		Waist	26"
"		Hip	32"

There is a defect in the bony structure of her spinal column, viz.,—Spinal Scoliosis at the sacral

region deviating towards the right, giving rise to a Kyphotic Pelvis Right hip higher than the left

The woman states that her chief reasons for admitting herself into hospital are that she has never menstruated since the age of her puberty and has borne no children, and that there is excessive secretion during coitus, and that her genital canal seems very short for which she needs some operation done to her. Internal examinations (both per vagina and per rectum) were then made and to our astonishment the following very interesting pathological conditions were found to exist —

I. *External genitals*—Properly developed

II. *Digital examinations per vaginam*—

Vagina very short, vaginal canal much shorter than the ordinary run of married women. The average measurements of the vaginal canal anteriorly about $2\frac{1}{2}$ " and posteriorly about $3\frac{1}{2}$ ", but in the present instance it hardly admits the tip of the index finger, and with much effort an inch of the index finger was admitted

(diagram) the vesico-vaginal reflection in front and dent of the broad ligaments behind

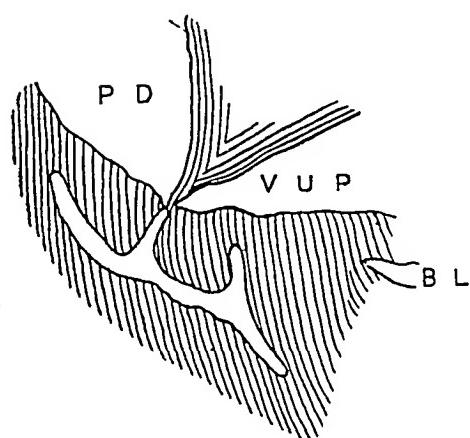
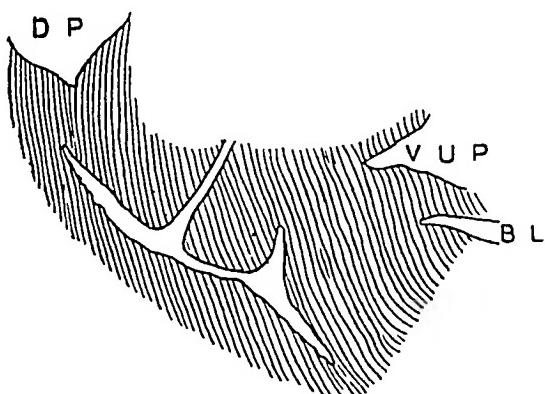
No cervix or Fundus Uteri could be felt, nor the fallopian tubes neither the ovaries. A small rudimentary body could be seen protruding at the entrance of the vaginal orifice—resembling in shape a parrot-beak, size the tip of a nose—with a dent below the tip

Examination per rectum—No uterus could be felt neither the ovaries nor the tubes. In my experience, though I have examined nearly 20,000 women, I have never come across a single woman with such a malformation as in the present case, and other fellow professional workers may have been more fortunate in their longer experience. But I venture to say that it is a case of extremely rare occurrence

There are, as we know, generally two processes in the progression of an organ to its mature form, viz., (a) development and (b) growth. There are, therefore two causes which together operate in producing malformations viz. (a) arrested developments and (b) arrested growth. In the present instance, the abnormalities are likely due to (i) faulty development in the foetal stage during the differentiation of the sexes, and (ii) faulty growth in after birth. The rudimentary body, which was seen at the entrance of the vaginal orifice, is, very likely, the remaining of the Mullerian Duct

To a practical medical man, malformations seem of little value because he has no power of modifying the result. To a scientific man, they are of the greatest interest, as furnishing him with permanent impressions of the transitional stages of development, they are developments caught in the act and fixed permanently for after-investigation

In this case the uterus is wanting and with it, its appendages, viz., the fallopian tubes and the ovaries. The patient is put under experimental treatment, i.e., under Thyroid Thymus, and Ovarian extracts and daily dilatations and plugging. Although no generative organs can be substituted and compensated for their absence, still I should be much obliged and thankful to any reader of this article, or any more fortunate practitioner, who would come forward and suggest something better in the way of making improvement in this patient, if he has experienced better results in other mode of treatment in similar cases as the present one. The patient is experimentally put under thyroid thymus, and ovarian extracts, as this is the best chance to test the intrinsic qualities of the above drugs, as these drugs are said to possess the power of developing and improving the arrested growth of defective and malformed bodies, and I cannot imagine that a better case could be had than this to test the efficacy of these drugs



On carrying the finger upwards, the examining finger could feel a gap between the bladder anteriorly and the rectum posteriorly, also reflections of the pelvic peritoneum being (see left side

Indian Medical Gazette

AUGUST

THE I.M.S. DINNER IN LONDON

The annual Indian Medical Service dinner was held at the Hotel Cecil, on Monday, 8th June, Surgeon-General P H Benson Madras retired, in the chair. Seventy-four members of the service, past and present, attended, with the following eight guests General Sir Edmund Barlow G.C.B., Military Secretary India Office, Sir James Digges La Touche K.C.S.I., late Lieutenant-Governor of the United Provinces, now member of the India Office Council Sir Thomas Barlow, Bart., K.C.V.O., President of the Royal College of Physicians of London, Sir Rickman John Godlee, Bart. K.C.V.O. President of the Royal College of Surgeons of England, Sir Francis H Champneys, Bart., President of the Royal Society of Medicine, Austin Low, Esq., of Messrs. Grundlay and Co., and the Editors of the *Lancet* and of the *British Medical Journal*. Sir David Ferrier, President of the Medical Society of London, was also invited, but was unable to be present. There were no speeches. The Chairman proposed the health of His Majesty the King, and immediately after that of the Medical Services, while later in the evening Surgeon-General Cleghorn proposed the healths of Lieutenant-Colonels John Anderson and J J Pratt, who had managed the dinner, Lieutenant-Colonel P J Freyer, who has carried out that task for the last fifteen years, having now given it up. During the course of the evening Madame Edith Grey-Burnand gave selections from her repertoire of songs.

The following members of the Service were present —

Surgeon-Generals — P H Benson, Sir Richard Havelock Charles, G.C.V.O., J Cleghorn, C.S.I., A M Crofts, C.I.E., J P Greany, and G W R Hay.

Colonels — C W Carr-Calthrop, D French-Mullen, W G H Henderson, H Hendley, D E Hughes, M D Moriarty, R D Murray, A Porter, and P A Weir.

Lieutenant-Colonels — A W Alcock, C.I.E., W G P Alpin, J Anderson, A E Berry, R Bud, C.I.E., H.V.O., W H Burke, W H

Cadge, D G Crawford, R H Elliot, P J Freyer, G H D Gimlette, C.I.E., H Greany, P de H Haug, J G Hulbert, G B Irvine, E R Johnson, J N Macleod, C.I.E., D P Macdonald, R K Miller, T R Muhoney, A H Nott, S E Piatt, K Prasad, J J Pratt, B J Singh, W H Thornhill, D Warlike, H R Woolbert, H G L Woitabet and F W Wright DSO

Majors — S H L Abbott, C R Bakile, F L Blenkinsop, F D S Fayrer, J K Fleming, W F Harvey, E C Hepper, S P James, G King, R W Knox, W H Leonard, W T McCowen, W R J Scroggie, M H Thornley, J N Walker, and C G Webster

Captains — A C Anderson, C H Barber, D P Gol, A F Hamilton, L Husch, J L Lumham, A C Munro, R D MacGregor, J O'Leary, M F Reaney, H Ross, T C Rutherford, W D H Stevenson and M F White

Current Topics.

THE MIDWIFE IN ENGLAND AND INDIA

Times have greatly changed since Sir Henry Halford, President of the College of Physicians, writing to Sir Robert Peel in 1827, said that 'Midwifery was an act foreign to the habits of a gentleman of enlarged academic education.' Yet it is not without interest for those of us who were students at the time to recall the struggles that the London Obstetrical Society and the B.M.A. had, in order to give birth to the Midwives' Act of 1902. For nearly a century (1813) the Society of Apothecaries and the L.O.S. had been trying to raise public and professional interest in the subject, but despite Lister and Dickens very little progress had been made in safeguarding the lying-in-mother and infant from meddlesome midwifery, ignorance and carelessness. Everyone recognises nowadays the excellent work of the Central Midwives' Board, and how by the Act of 1902 it has gained supreme control and authority in all matters relating to the training, registering and licensing of midwives in England and Wales. Therefore it is interesting to read a little book* by an American called "The Midwife in England," in which our Act is extolled in the highest terms and in which it is shewn in the words of Edgar that 'America, despite its aggressiveness and vaunted progress, is quite a decade behind England in dealing with the midwife problem.'

* *The Midwife in England*, by Carolyn Van Blaicom, published by the Committee for the Prevention of Blindness, New York.

It is now generally recognised that the safe delivery of a woman in childbirth is a matter of national importance. Therefore it behoves all governments to legislate on the subject of those in attendance on mothers, for in Europe at least 50% of births are attended by midwives, and unless these women are properly trained the toll of disasters in the form of blindness, sepsis, and infantile mortality would be very great. In England we have already begun to see the benefit of the Act in its results even since 1901, for the infantile mortality has fallen from 151 to 106 per mille, and the deaths from puerperal sepsis and accidents at childbirth from 4.65 to 3.69 per mille. If America is the last of the Western nations to awake to the vast national importance of this problem, what can we say of India where over 90% of the native population is attended by unskilled midwives, where the maternal morbidity and mortality is enormous, and where the child-birth mortality is over 300 per mille, to say nothing of the enormous amount of preventable blindness? The problem in the East is one of difficulty, for already with the growth of education the demand Government or private trained *dhaus* is greater than the supply in the large towns. Some countries have gone so far as to supply the poor of each district with the services of a midwife at the public expense. This is what is attempted in mofussil districts, but owing to better wages in the towns, the best *dhaus* will not go to the mofussil, and if they do they quickly deteriorate. At present the scheme which appears to work best is that of the Missionary Societies who send out District Visitors who can go from house to house advising and helping in the elements of hygiene and sanitation. Progress in the East is necessarily slow, however there are signs already of the appreciation of what cleanliness means to both mother and child, so perhaps an age is not very far off when Indian ladies of the better classes will venture to disseminate knowledge of Western methods among their poorer sisters in order to stem the appalling and almost entirely preventable sickness and death at childbirth.

SPIRITUAL HEALING

MESSRS Macmillan & Co have published the report of a clerical and medical committee of enquiry into spiritual, faith and mental healing.

A Conference of representatives of the clerical and medical professions met at St Paul's in October 1910 to discuss the asserted results and the rapid development of spiritual and faith healing movements. This Conference consisted of such leading men as the Bishop of Stepney, the Dean of Westminster, the Dean of St Paul's, the Dean of Durham, with Sir Dyce Duckworth, Mr McAdam Eccles, Dr de Haviland Hall, Sir D Powell, Sir Clifford Allbutt, and others to represent medicine and surgery.

Nineteen sittings were held and evidence was taken, and some cases of asserted cure by "spiritual" healing were examined.

We confess we have not been impressed by the examinations or replies of the witnesses or with the report of the Committee.

The "conclusions" will convince nobody not convinced before and tell us nothing not known before. They are prefaced by certain statements or beliefs which read strangely in a scientific document—"They fully recognise the operation of the Divine Power"—and "desire to express their belief in the efficacy of prayer."

After these preliminaries (which go perilously near the begging of the whole question) they state that "faith" and "spiritual" healing does not prove to be different from "mental" healing or healing by "suggestion". This is at least something gained. They recognise that "suggestion is more effectively exercised by some persons than by others," a fact obvious to all.

They are "forced to the conclusion, after the most careful inquiry, that "faith" or "spiritual" healing, like all treatment by suggestion, can be expected to be permanently effective only in cases of what are generally termed "functional" disorders. *The alleged exceptions are so disputable that they cannot be taken into account*"

The lines marked in italics are at least a clear and definite statement which disposes of much. The committee go on to emphasise this point and warn those who resort to "healers" that they "may thereby be postponing until too late the medical treatment which might serve to arrest organic disease."

Appendix B is the best part of the report. "The alleged diseases healed by spiritual healing" include cancer, arteritis, hip-disease, angina pectoris, abscess of the liver, erysipelas, dysentery, tetanus, disseminated sclerosis, etc, etc.

"In the greater number of cases no medical evidence was obtainable,—apparently the healers diagnosed as well as 'healed'." "In the cases of cancer, Reynaud's disease and disseminated sclerosis, it did not appear that the course of the actual disease was in any way retarded."

Appendix C is useful chiefly as showing the extraordinary claims put forward by certain clergymen, but the most curious evidence recorded is that of the Right Hon. The Earl of Sandwich who went so far as to say that "he recognised his power as a Divine gift!" After that we are not surprised to learn that he "was unwilling to undertake to furnish the committee with particulars of his cures" "They were indisputable" After such a statement it is refreshing to turn to the clear evidence given by Dr Lloyd Tuckey and Dr Milne Bramwell.

THE AETIOLOGY OF FOOD POISONING

The publication of Dr Savage's new book on the *Bacteriology of Food and Water*, which is reviewed in the present issue, draws attention to the author's work on food-poisoning which formed the subject of a research carried out at the instance of the Local Government Board.

The conclusions arrived at by the author will necessitate a revision of the commonly accepted ideas on meat and food-poisoning.

Dr Savage says:

"At one time most cases of food-poisoning were ascribed to the chemical activities of putrefactive and intestinal bacilli, particularly one or other of the organisms described as *Proteus vulgaris*, *P. mirabilis*, etc.

This conception was largely based upon a series of interesting investigations upon the chemical products of putrefaction. It was ascertained that when meat was allowed to putrefy certain basic bodies (called *ptomaines* by Selmi), which closely resemble the vegetable alkaloids, could be isolated, and that these bodies were possessed of highly poisonous properties as shown by their injection into laboratory animals. The symptoms produced were in some ways similar to those met with in cases of food-poisoning. In consequence it came to be believed that food-poisoning outbreaks were to be explained as due to the ingestion of food in the early stages of putrefaction, the symptoms being caused by the presence of ptomaines, hence the popular name of ptomaine-poisoning for these cases and outbreaks.

Latter investigations have shown that, whether or no putrefactive bacilli and their toxins play any part, basic indigenous bodies of the nature of ptomaines certainly do not, and the term 'ptomaine-poisoning' should be abandoned as incorrect and misleading.

Recent researches have shown that when outbreaks of food-poisoning are bacteriologically investigated, in the majority of cases members of the Gaeertner group of organisms are isolated and can be shown to be the cause of the outbreak.

The Gaeertner typhosus group of bacilli come between the chemically active *B. coli* group, and the chemically inactive *B. typhosus* group. This group have identical cultural characters but are separated by serological and immunity tests into three organisms, i.e., *B. enteritidis*, *B. supertifex*, and *B. paratyphosus* β .

A rare condition of bacillary food-poisoning is that due to *B. botulinus*. Most of the outbreaks have occurred in South Germany and have been due to eating raw sausages. The symptoms are almost entirely referable to lesions of the central nervous system.

Attacks of food-poisoning due to the Gaeertner group vary greatly in severity and extent. Sometimes a large community is attacked and the symptoms may be severe and death ensue.

The food eaten is generally meat in some form, but not invariably so, many outbreaks being recorded from impure milk and ice creams.

The origin of the Gaeertner bacillus is found by Dr Savage to be as follows — It occurs in the intestines of a proportion of animals, not as a normal inhabitant, but as a diseased condition. In most cases the animal shows no symptoms, that is, they are "chronic carriers". The meat is contaminated by the intestinal contents during slaughter and dressing, and it is probable that rats which so commonly inhabit slaughter houses play a part in causing the disease, as they also harbour the bacillus.

The Gaeertner bacillus can thrive on the surface of meat and when handled by the cook infection is spread to fish, milk, and other articles.

TENNIS ELBOW

TENNIS is such a popular game in India that cases of Tennis Elbow or *Epicondylitis* are by no means unknown. We therefore quote the following extracts from a paper by Dr. W. P. Covles in the *Boston Medical and Surgical Journal* (March 26th, 1914) —

"The history of the affection in those in whom it occurs in the course of their favorite exercise is almost invariably as follows. Immediately after a stroke, or occasionally some few hours or days afterwards, pain is noted in the elbow, usually the right, in the neighbourhood of the external condyle. This pain may be so severe and sudden as to seem to paralyze the arm temporarily, so that all movements are performed with the greatest difficulty or not at all. This pain is usually markedly increased by extension of the forearm, not so much by flexion and may be intermittent or constant, and returns immediately the exercise is taken up again. Lesser degrees of pain and disability are noted in many cases. The pain is most sharply limited to the neighbourhood of the external epicondyle of the humerus.

Examination soon after the injury usually shows no marked swelling of the elbow and no ecchymosis. The motion of the elbow is not as a rule limited in flexion or extension, but there may be great pain on forced extension in the neighbourhood of the external condyle. The radial head is found to rotate perfectly. Pronation and supination are usually performed without pain. In short, the examination would seem to certainly rule out any marked bony lesion or fracture. On pressure, an exquisitely painful spot, the size of a dime, is found directly over the external epicondyle. Much pain is felt in this spot on full extension of the forearm, which radiates down the arm to the fingers. The pain is increased when the fingers are closed over a round hard object, as a crystal globe. It is also brought on or increased by such motions as reaching a book from a library shelf and particularly in putting on a coat. After such movements, the arm may feel weak and useless for a considerable time. Sometimes there may be a suggestion of slight thickening felt over the external epicondyle, but this is never marked. Crepitus or abnormal mobility of the epicondyle is never noted.

After a period of weeks or months, with or without treatment, the pain and the tender spot gradually disappear. The patient may again take up the favorite sport, with, however, a possibility of a speedy recurrence of the trouble. A considerable disability and discomfort may result from the injury, — much more than that only necessitating giving up the chosen exercise. Exactly the same trouble occurs from hard manual labor, as will be seen later.

From such a definite localization of the pain and tenderness with other suggestive symptoms of this injury, we may justly presuppose some characteristic

and constant lesion of the tissues immediately adjoining the external condyle of the humerus. Tears of the fascia or some muscular bundle have been suspected in a general way, as well as nerve implication. Whatever the lesion is, it seems generally limited to that part of the external epicondyle affording attachment to the supinator brevis, extensor communis, extensor minimi digiti and anconeus muscles. Besides this particular region, the humero radial part of the joint capsule to which some of these muscles are attached has been suspected. Regarding the mechanism of the injury, it seems probable that it occurs during partial extension of the whole arm, the elbow slightly flexed at a time when the forearm is midway between pronation and supination, and that some of the muscles exerting a powerful pull, tear off their attachment to the external epicondyle, perhaps tearing off small pieces of bone with them. In cases where the exercise is repeatedly attempted after the initial injury, this process may be repeated in a lesser degree again and again, thus giving rise perhaps in some cases to a localized periostitis of the external epicondyle. This also may be kept up by the ordinary movements of the arm in daily life. It is established that simple rest of the elbow for a short time does not cure the condition. It may become quiescent and the patient might think it entirely cured, when the first stroke of his racket will bring back all the pain and disability. That numerous theories of the etiology of this condition have been put forth other than the above will be seen later. Certainly some of them do not seem to be compatible with the findings of the typical cases.

CONCLUSIONS

It would seem from a study of the trouble based on those cases in the literature and of the personal ones that there might be perfectly well two lesions causing the symptom complex known as tennis elbow or epicondylitis.

First, a partial tearing of some of the muscular attachments from the external epicondyle, giving rise to the separation of the bony spicules as in Cases 2 and 3, with the possibility of a periostitis from such tearing, which need not necessarily be marked enough to show in a radiograph.

Second Injury to the radio humeral joint capsule from antagonistic muscular contraction of the supinator brevis and supinator longus, as believed by Preiser. It does not seem as if Preiser's theory of predisposition to arthritides deformans of the radial head could be accepted in all cases."

THE THERAPEUTICS OF THE POTATO

Dr Heaton C Howard has published a pamphlet* on *The therapeutic value of the potato*, which contains much which is not generally known about this pleasant and popular article of diet.

The potato we all know belongs to the N O Solanaceæ and might be expected to have some potent qualities such as belong to Atropa Belladonna, but the potato tuber is known to contain nitrogen, starch, cellulose, fat and ash, the vegetable acids of the juice are combined with potash, soda and lime, potassium being the chief ingredient.

Dr Howard has had potato juice preparations made in the forms of liquid extract, emplastum, liniment, ointment and in ampullæ †

Dr Howard gives cases where the extract applied as a fomentation has been of rapid and decided value in cases of synovitis, and in acute gout attacks. The ointment and liniment are also used with success in lumbago, rheumatism, bruises, etc., and chilblains. Dr Howard has also used the drug hypodermically injected near the seat of pain. The pain was greatly increased for a few minutes, "it then eased down and in 10 or 11 minutes the active gouty pain had completely gone." It is also said to give great relief in herpes ostei.

Dr Howard clearly believes in the remedy, but we have not heard of any support for these views.

ABDOMINAL WOUNDS ON THE BATTLEFIELD

LIEUT-COL JACOB FRANK (*Military Surgeon, April 1914*) in an interesting article on the rational treatment of gunshot wounds of the abdomen on the battlefield writes as follows —

"In every gunshot wound of the abdomen, irrespective of size and irrespective of whether perforation of the viscera is evident or not, the patient is to be guarded against peritonitis, not by protecting him against ectogenic infection by covering the wound, but by deviating away from the peritoneal cavity the substances and bacteria certain to produce an endogenous infection.

To accomplish this it will be necessary to revolutionize our present method of teaching first-aid to soldiers and sanitary personnel. Each soldier, and that means, of course, the entire commissioned personnel as well, must be taught that to apply a dressing to abdominal wounds of entrance and exit means the protection of these wounds from outside infection, while intestinal contents and bacteria are allowed to flow into the peritoneal cavity and there to do their mischievous work undisturbed. Accordingly, it is a very simple matter to teach them the following simple technique.

If the wound happens to be large enough, open the first aid packet, take one end of the bandage, twist it between your fingers into a wick of about three inches, and push this wick into the abdominal cavity with any blunt, narrow, clean instrument. Use the rest of the bandage in the usual way. (The advantage of using the wick in this way is that it cannot become lost in the abdominal cavity.)

If the wound of entrance is too small to allow the insertion of the wick, it should be enlarged with a clean, sharp knife.

If the wounds of entrance and exit happen to be situated on the anterior abdominal wall, both wounds should be drained in the same manner. Wounds on the back require aseptic dressing only.

If no first-aid packet be on hand, they should be taught to use any piece of clean linen, such as a strip torn from a handkerchief, shirt, etc.

Men should be instructed to help themselves in such manner, as even the help of a comrade is not always available in the heat of battle. It will be held that such a procedure which cannot be accomplished aseptically means to invite infection from without.

It goes without saying that asepsis is always desirable, but, of course, impracticable at the hand of combatants.

Yet, between the choice of asepsis and early instituted drainage of the abdominal cavity, I would prefer drainage a thousand times provided, of course it be applied within an hour or two."

* Baillière, Tindall & Cox. Price 1s.

† These are obtainable from Bass Brothers & Stevensons, Grange road, Bermondsey.

POLIOMYELITIS

It is well known that for the past few years epidemics of this serious disease have been prevalent in many parts of the United States. We, therefore, welcome the publication of an admirably complete report on the epidemiology of this disease by Dr Wade H Frost.* The symptoms of the disease are fever, headache, acute pains in spine and limbs, stiffness of neck, delirium, convulsions, constipation or diarrhoea, vomiting, sore-throat, profuse sweats, Keinig's symptom was absent and following these symptoms paralysis of the extremities, one or both legs or arms with paralysis of bladder, rectum, etc.

We may quote *in extenso* Dr Frost's summary.—

SUMMARY

"Reviewing briefly the data and considerations which have been discussed, poliomyelitis is due to a specific infective agent, of which the only demonstrated natural sources are infected human beings, who may be divided into the following groups. The recognized sick, convalescents, the sick not recognizable as poliomyelitis cases, and passive virus carriers apparently in good health. The infective agent is known to be discharged from these sources in the excretions of the respiratory and digestive tracts, it is known to be fairly resistant to the destructive agencies encountered in nature outside of the human body, and to be capable of gaining access to the tissues of monkeys and causing infection through the apparently uninjured mucous membrane of the nose, also, though less constantly, through the digestive tract and through the agency of certain biting insects of wide distribution in nature.

The disease is, in nature, of widespread though rare sporadic or endemic occurrence. In epidemics it has occurred in recent years over a large part of the world, the outbreaks being sometimes discreet, at other times spreading rapidly, but irregularly over wide areas. Such epidemics characteristically run a rather rapid course in a given community, declining after a few months or less, after having attacked (so far as is evident) only a small proportion of the total inhabitants, usually not more than one in a thousand, and do not recur in the same locality for a period of at least two years. In epidemic foci children under 5 are attacked much more often than are older persons, the whole adult population remaining virtually immune in some epidemics.

The rapid spread of epidemics over wide areas, their spontaneous decline after only a small proportion of the inhabitants have been attacked, and above all the preponderating incidence in young children, have not been satisfactorily explained by any hypothesis other than that the infective agent, during epidemics, is widely spread, reaching a large proportion of the population, but only occasionally finding a susceptible individual, usually a young person, in whom it produces characteristic morbid effects.

The conclusion that susceptibility to poliomyelitis is comparatively rare, and that the incidence of the disease is limited chiefly by a general immunity rather than by the dissemination of the virus, is reached primarily by exclusion, since no other hypothesis yet advanced satisfactorily explains the epidemiological peculiarities of the disease. The conclusion is, however, greatly strengthened

by direct evidence, namely, the demonstration of the virus in the secretions of well persons. Obviously the fact that these persons, though carrying the virus in their secretions, have developed no clinical evidence of infection, is proof of their insusceptibility. Should passive carriers be shown to be actually more numerous than clinically recognizable cases of poliomyelitis, then it will be proven that immunity to this infection is more general than susceptibility.

The only definite conclusion, then, which is drawn from the epidemiological studies of poliomyelitis is that the infective agent is, during epidemics at least, quite widespread throughout the population affected, the incidence of the clinically recognizable disease being limited by the relatively rare susceptibility to the infection. This conclusion, in the light of our present knowledge holds equally well, whether it is assumed that the route of infection is through contact, through insects, or through dust, whether the ultimate sources of infection are human beings or lower animals.

As to what constitutes susceptibility or the converse—immunity—practically nothing can be deduced except that age is obviously a factor of importance, susceptibility being generally greatest in the first half decade of life, thereafter progressively diminishing until in adult life there is a very general immunity to natural infection.

The reason for this is at present a matter of speculation. Conceivably the greater immunity of adults may be due to a non-specific resistance, developing naturally with maturity, without reference to previous exposure to or infection with the specific virus of poliomyelitis."

LAHORE TUBERCULOSIS PREVENTORIUM

We have on a recent occasion expressed strongly the view that the time has not yet come in India for the establishment of Tuberculin dispensaries, because (1) the results are at least doubtful of benefit, (2) and the danger is great if such a potent drug as Tuberculin is used by any hands but the most experienced and skilful.

The following extract from the unsigned report of the Lahore Health Officer shows the safe lines upon which the great problem of the prevalence of this fell disease, absurdly named "the whiteman's plague," is to be attacked.

TUBERCULOSIS PREVENTORIUM versus A DISPENSARY

It is necessary, in order to prevent a misapprehension in some quarters, to consider the principles underlying the establishment of Tuberculosis preventoria and their method of working to suit our conditions and to see how, in practice, they differ from the ordinary dispensary, or an out patient dispensary of a hospital. At the outset it has to be admitted that Tuberculosis is an infectious disease, and an endemic disease so far as it is related to a house, and further that it produces an appalling mortality in congested areas among the ignorant. All this at once shows that it cannot possibly be successfully attacked without some organization so constituted that it can grapple with every aspect of the preventive side of the subject and follow its ramifications through the social cosmos. This is what the tuberculosis preventorium is able to do and what an ordinary dispensary can't do, and the organization which exists and which can best deal with the preventive aspect is the Health Department. To be entirely successful it must have a close association with any other institution, but the time has not as yet come for any very close association with such at present other than that of co-operation and drafting of cases to hospital as we have a tremendous amount of educational and preventive work to accomplish, and no adequate provisions exist for the number of cases,

* Washington, Hygienic Lab., Bulletin No. 90 October 1913. Government Printing Office, Washington, U.S.A.

† Under the term "infected human beings" as used here are included passive carriers of the virus, persons in whom the virus has found lodgment and multiplied, without, however, producing clinically evident effects. Such persons should perhaps be called "infested" rather than infected, reserving the latter term for those manifesting a clinical reaction.

It has also to be recognised that many of such would not enter a hospital. Its functions may thus be summarised, so far as Indian conditions permit, as—

1 As the head quarters to disseminate information and advice as to prevention and care of the disease and instil some knowledge of the nature of the disease

2 To give any aid in the diagnosis of cases or examine any notified case where desired

3 To follow up all death returns for the purpose of verifying the truth of the return and ascertaining the incidence

4 To examine any contact in any house so as to detect early cases

5 To act as a "Clearing House" for patients so as to draft them either to a medical dispensary, out-patient dispensary, a hospital, or to a hospital ward or sanatorium

6 To carry out the disinfection of infected houses as notified by the Health Officer

7 To report housing and sanitary deficiencies met with in the course of the house visiting for action by the Health Officer; and this is where the administrative control of any tuberculosis service being under the Health Officer, as it is in England, gives such beneficial results. Tuberculosis began to decline in England before Tuberculin was used

8 To give tuberculin as a preventive measure to early cases and suitable cases as will not go to hospital

9 Home visiting by Lady Health Visitors to secure hygienic and dietetic measures

10 To be a medium through which any charitable or voluntary organization may give any philanthropic help

11 To be a centre for distribution of sputa pots, leaflets, etc

Further, it is an advantage that a Municipality which expends the money on the institution should have the control of the expenditure, as they are best qualified to know the local needs, and it induces a greater degree of interest by members which it is desirable to cultivate in a scheme where much educative progress is to be made. Gradual evolution is the only way by which the ideal may be attained, and it is necessary to look at the establishment of this institution from a broad outlook and not desirable to think that what is suitable for English conditions can be sprung upon the people here at once. Members of the community have to learn—not from mere tables of a few months—that the money spent on the work indicated is money well spent, as the loss to the community by death and sickness of many wage earners is a serious economic loss

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THE PROSPECTS OF THE YOUNG PRACTITIONER

The following remarks are taken from the *St Bartholemew's Hospital Journal* (May 1914). They are decidedly optimistic, but to us they show one of the causes for the falling-off in the quality and quantity of the candidates for the I M S which we have already lamented and which has been forcibly represented to the Government of India by the British Medical Association and more recently by Sir Malcolm Morris—

"There is no doubt that the prospects for those who are beginning their course of training for the medical profession are exceedingly bright. For several years past the authorities of most of the hospitals in the neighbourhood of London and in the provinces have found it difficult to fill the post of House Surgeon and House-Physician. Whereas formerly there was good competition for these resident posts, it is not uncommonly happens that no candidates whatever apply, even though the salaries have in many cases been largely increased. The dearth of young doctors has not for

many years been so acute as at the present time, and local authorities in London and throughout the country are finding the greatest difficulty in filling vacancies. Some of the Borough Councils are now paying as much as £500 a year for medical officers in dispensaries, positions which only a short time ago were easily filled, although the salaries were only half that amount.

The position now is that any qualified medical man can, immediately on obtaining his diplomas, secure a post worth at least five guineas a week and all found.

The chief reason for this dearth of young medical men is the decreased number of students who for some years past have entered the profession.

The Dean tells us that the average number of students entering to the full curriculum during the decade 1880-1889 was 130 per annum, for 1890-1899 the average was 105 per annum, whereas in the decade 1900-1909 the number of full students fell to an average of 71 per annum, and last October the entry of full students reached the lowest figure on record, namely, 53 full students.

Instead of the Insurance Act having worked detrimentally to the medical profession, the contrary has been the result, for in many cases doctors, whose practices were small and insignificant, are now busy with panel patients, and are receiving good fees. With the recent increase in the number of lucrative public appointments and the probability of still further increase in the near future, this dearth of medical men becomes a serious public question."

THE DESTRUCTION OF RATS AND RAT FLEAS

In the course of an admirable lecture to the Sub-Assistant Surgeons assembled at the Congress held in May last at Ambala, Lt-Col D T Lane, I M S, described as follows a useful and practical method of destroying rats and rat fleas, which has been successfully carried out in the Ambala jail, and which is well worth using in other places—

"It is very regrettable that people are so apathetic that they won't take any measure to protect themselves from plague. If each householder kept his house free from rats, there would be no more plague. The Ambala jail is plague proof, there are no rats there. As you know, the measures we have been taking for the prevention of plague in connection with rat destruction are trapping, poisoning and smoking. Smoking is a very effective measure, but as ordinarily carried out it is very slow, very expensive and very irksome both to the men who carry out the work and to the people in whose house it is being done. I have been trying to simplify the smoking of rats for sometime past and I have ultimately invented this little packet, or plague pataka. It is really a little chemical "Agent," which burns in a space no matter how confined and at the same time burns neem leaves and a little chulis. The method of using it is to set it on fire, insert it into the rat hole, and block the hole with mud. The fumes kill the rats and rat fleas. If two men work on the outside of the house, one lighting the packets and inserting them into the holes and another blocking the holes with mud while two more men do the same in the inside, the smoking can be done very rapidly and cheaply. Four or five men can smoke a village of 3,000 or 4,000 people in one day. Sub Assistant Surgeon Jaswant Rai has given me very great assistance in making these plague patakas. I will give each of you a couple of dozen of them, so you can try them for yourselves. I may say that burning these patakas on the floor of a house does not kill rats on the roof. And nothing that is ever burned on the floor is likely to do so except possibly some deadly poison which could not be put into the hands of workmen to use. I think if we consider the habits of

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rats, we will find that in the ordinary village houses in the Punjab there are very few rats in the roof during the day, and the roof rats are not likely to have many fleas as fleas detest light."

THE NEW FIELD SERVICE REGULATIONS IN THE AMERICAN ARMY

THE table given below, which we take from *The Military Surgeon* (May 1914), shows the changes which have now come into force in the personnel and *matériel* of the medical arrangement of an army in the field as regards the army of the United States of America —

"Allotment and distribution of sanitary personnel and transportation in Field Service Regulations, 1910, compared with those of Field Service Regulations, 1914, War Basis"

	Officers		Enlisted men		Mounts		Ambulances		Wagons		Draft animals		Pack animals	
	1910	1914	1910	1914	1910	1914	1910	1914	1910	1911	1910	1914	1910	1914
Division headquarters (a)	4	3	9	7	14	11			9	b	36		9	9
Infantry (9 regiments)	36	36	216	216	117	117			1	b	4		1	1
Cavalry (1 regiment)	4	3	24	16	27	20			2	b	8		2	2
Artillery (2 regiments)	6	6	42	38	46	46								
Engineers (1 battalion)	3	1	9	4	9	2								
Signal Troops (1 battalion)	2	1	6	4	8	5								
Trains—Exclusive of the sanitary train	3	3	12	12	9	15								
Ambulance companies (4)	21	21	318	318	76	76	48	48	12	12	240	240	16	16
Field hospitals—(4 1910) (3 1914)	21	19	230	203	60	49			32	24	128	128		
Reserve supply (1)	1	1	11	8	4	2			6	6	24	24		
TOTAL	101	94	877	826	370	343	48	48	62	42	440	392	21	28

a Includes Sanitary Inspector

b One wagon belonging to the divisional Sanitary train is attached to each regiment in time of peace to carry the sanitary equipment On mobilization these wagons join their companies"

AN AMERICAN APPRECIATION OF THE I M S

IN the *Edinburgh Medical Journal* (May 1914), Dr Fielding H Garrison, the author of the great *History of Medicine* which we fully reviewed in our issue for June, has an article on "Anglo-Indian Surgeons," which is an amplification of the notices already given by him in his *History* and is largely founded on our special I M S number in 1912 (I M S, Vol XLII, page 235). The article is a most appreciative one and should be read by all His article concluded with the following lines —

"THE achievement of the Indian Medical Service, not merely in medicine and science, but in the actual administration of such vast area as the Indian Peninsula is, well worthy of the lines in Lecky's poem —

"These are those who governed men
"By the sword or voice or pen—
"Who through good or evil fate
"Shaped the fortunes of the State,
"Framed its creeds or laws, or bore
"Its flag to many an unknown shore,
"Fought many a fight on sea and land
"Or moulded realms by wise command,
"Whose beneath the Indian sky
"For some strong guide the nations e'er,
"In lands where deeds, not words, have sway
"Where men can rule and men obey"

Choyee, I R C S, Dr MacCormac, Mr Beggs, and and Dr Davies

We call the attention of our readers to the First Annual Report of the King George V Anti-tuberculosis League in Bombay The report is full of interesting matter and shows the very considerable prevalence of tuberculosis in Bombay The Hon Secretaries of the League are Dr J A Turner and Khan Bahadur N H Choksy

ANOTHER Medical Journal has made its appearance in India, entitled *The Madras Medical Journal*, edited by Dr T K Menon, M.B. We have only seen the third number, which contains an excellent article on the Histopathology of Rhinophyma by Dr T S Tuamati of the Madras College, an article by Dr S Amritraj on the still neglected subject in India of the medical inspection of school children, and a useful paper by the Editor on some Economic aspects of Tuberculosis

We wish the new venture every success

THE present Royal Commission on Venereal Diseases must do good in pointing out the dangers of these diseases The stage has now come to the rescue and two recent plays deal with this subject,

viz Philip's Wife by Dr F G Layton, author of that capable novel of provincial medical life called "Dr Gray," and M Brieux, whose play "Damaged Goods" has been translated from the French by Miss Bernard Shaw

Reviews.

Sclero-Corneal Trephining—By R. H. ELLIOT, F.R.C.S., Lt. Col., I.M.S. Second Edition, 1914 London G. Pulman & Sons

THE almost phenomenal success of Lt-Col Elliot's method of operating for the relief of glaucoma has naturally led to a demand for a fresh edition of his book. Since the publication of the first edition in 1913, based on his great experience of the operation in the Madras Ophthalmic Hospital, Lt-Col Elliot has had the opportunity of lecturing on his method and has actually demonstrated it on 155 eyes, in 28 different hospitals of 14 large towns in the United States.

He has consequently been able to thoroughly revise the book and especially has greatly expanded Chapter V in which will now be found a very minute and detailed account of the technique of the procedure he has adopted. The book is very completely illustrated and well printed and is sure to have a wide sale not only in India but in America and in Europe. Recent ophthalmic literature has been full of this operation, but very many will be glad to have the book for themselves.

Diabetes Its Nature and Treatment—By Dr T. M. NAIR, M.D. Madras, 1914. Higginbothams, Ltd

THE present book is intended to give information on "what diabetic patients ought to know," but we fear that it will appeal less to them than to their medical advisers, as it is written in a technical style, which will scarcely be understood fully by non-medical readers.

Dr Nair has not attempted more than a review of all present knowledge of diabetes and it is useful that from time to time we should thus take stock of our knowledge. Diabetes is especially a formidable disease of the educated communities in India and we are glad to hear Dr Nair mention the "establishment of diabetic research in Madras." It is certainly one of the subjects which should be taken up under the auspices of the Indian Research Fund.

We are sorry that Dr Nair has not given more information as to the exciting causes of its undoubtedly prevalence among his own educated countrymen, he believes it is even on the increase.

The book gives an admirable résumé of modern research on the disease and we can recommend it to medical men on this account. We also hope that the publication of this book may lead to the

thorough investigation of this difficult disease by specially deputed experts, and we are informed that this is to be done.

International Clinics.—A Quarterly of illustrated Clinical Lectures and especially prepared original articles, Vol IV Twenty-third series, 1913 J. B. Lippincott & Co

These Clinical Lectures are edited by Henry W. Cattell, A.M., M.D., Philadelphia, with the collaboration of a number of well-known authors. Each article is apparently intended to bring forward whatever is most up-to-date in the subject dealt with and the publication is therefore one that will appeal to those who have not much opportunity for post-graduate study.

The present volume contains Chapters arranged under the following headings—

- (1) Diagnosis and Treatment,
- (2) Medicine,
- (3) Neurology,
- (4) Surgery,
- (5) Eugenics

Taylor's Practice of Medicine.—London J. & H. CHURCHILL, 1914 Tenth Edition Price, 18s net

To praise this well-known volume by Dr Frederick Taylor of Guy's is a superfluous task. The book is now in its tenth edition and has proved a satisfactory guide to several generations of medical students. The first edition appeared in 1890 and in the past 24 years nine more editions have followed.

It only remains for us to call attention to the improvements and changes in the new edition. In addition to a thorough revision of the text, several changes in the arrangement of the subjects has been made. The infectious diseases have been differently grouped. A special section has been given to diseases of the ductless glands. Chorea has gone over to brain diseases, poliomyelitis finds a place in the infectious diseases, new subjects have been introduced, such as rat bite fever, sandfly fever, psittacosis, Madura foot, diseases of pituitary and pineal glands and blastomycosis.

The book has been more completely illustrated, the 26 plates of the first edition are now increased to 71, and in addition 21 sketches have been added.

We have read many of the chapters and have no hesitation in saying that the book is better than ever and can be confidently recommended to the medical student.

The Bacteriological Examination of Food and Water—By WILLIAM G. SAVAGE, B.Sc., M.D., D.P.H. (Cambridge Public Health Series University Press.) Price, 7s 6d

This new volume of the series presents in book-form an account of researches hitherto only accessible in reports and journals. It deals in a clear and interesting manner with the processes and results obtained in the investigation of the bac-

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terial content of articles consumed by man. It is a book for the advanced student and research worker and the author takes for granted a knowledge of bacteriology and laboratory methods.

In the chapter on water the author quotes largely the work of Houston and follows that observer in accepting "flaginal" organisms as "excretal *b. coli*," and as indicators of pollution. The author ignores the valuable work of Corkey and Clemesha who, especially the latter, have shown that many of Houston's excretal *b. coli* are highly resistant organisms which live long in Indian waters and are not indicators of recent pollution.

The chapters on milk, shell-fish, soil, sewage and air give full details of technique and interesting statistics of results obtained.

Food-poisoning is a subject on which Dr. Savage has done much valuable research work, the results of which were published in his report to the Local Government Board. He finds that practically all outbreaks are due to infection by bacilli of the Gaeshier group and that "ptomaine poisoning," i.e., poisoning by cadaveric alkaloids, can seldom, if ever, occur.

Sensory and Motor Disorders of the Heart and their Nature and Treatment—By ALFRED MORISON, M.D., F.R.C.P. (Baillière, Tindall & Cox) Demy 8vo, pp. viii + 261, figs. 51 Price 7s 6d

Clinical Disorders of the Heart Beat—By THOMAS LEWIS, M.D., D.Sc., F.R.C.P. Shaw & Sons. Second Edition Pp. 115, figs. 54

THE scope of these two books is entirely different. Morison deals with the subject from all its aspects, anatomical, physiological, medical and surgical. He, for example, in the cases of angina pectoris, gives his reasons, based on minute pathological investigation, for believing that it results from differing and varying lesions. His book is illustrated by excellent photographs and microphotographs of the heart, so that the pathological findings can be compared by the reader with the clinical history of the case. The whole book deals with its subject minutely.

Lewis' book treats only of motor disturbances of the heart and that solely from the clinical standpoint. It is very clearly written, and will certainly prove most useful in helping the general practitioner, who is necessarily without the means of using precise graphic methods, in distinguishing by ordinary clinical means the various disorders of the cardiac mechanism. The chief alteration in the new edition is the introduction of a new chapter on Auricular fibrillation, a serious condition which we have seen follow emetic injection, though whether as an effect it is not possible to say.

Formulaire de Therapeutique Clinique—By Dr. L. PRON, Second Edition

ALTHOUGH this little book contains nearly 550 pages, it can be comfortably placed in the pocket. It consists of the following parts. (i) Formulaire clinique, giving a concise but satisfactory résumé

of the treatment of disorders and diseases, (ii) Régimes alimentaires, (iii) Opotherapie, (iv) Seirothérapie and vaccinothérapie, in which the typhoid vaccine is directed to be given intravenously. (v) Empoisonnements, an excellent section giving symptoms and antidotes, (vi) Analyses courantes, relating to the stomach, faeces and urine, (vii) Eaux minérales both of France and of other countries, (viii) Stéthoscopiques et Sanitoria, mostly limited to France, (ix) Résumé de pharmacologie clinique, forming an extremely useful section dealing with the various drugs and their activities, and lastly (x) Table des préparations composées, giving the composition dosage and an action of a large number of compound preparations, such, for example, as black draught and Dover's powder. It will be evident that the scheme of the book is an ambitious one. The subjects are dealt with wonderfully thoroughly. There is no question but that it is extremely useful for an English practitioner to be acquainted with French treatments, which are by no means necessarily identical with our own. The price of the book is 6 francs, and the publisher Maloine, Paris.

Elements of Histology.—By HENRY ERDMANN PADASCH, M.Sc., M.D. (Henry Frowde, Oxford University Press)

THIS book is a short up-to-date compendium of Human Histology and can be recommended to the junior students as an introduction to the subject. The style is concise, but reads more like a student's note-book than a finished literary work. The diagrams are excellent, some parts of the subject are fairly completely dealt with, but, the account of the Histology of the nervous system is very meagre and the diagrams few.

The chapter on Technique is not sufficiently comprehensive and no mention is made of frozen sections of flesh tissues, so commonly used for class purposes.

There are already so many compendiums of Histology that there does not seem to be room for a book where the author seems to have fallen between the two stools of brevity and completeness.

SPECIAL ARTICLES

I

OPHTHALMOLOGY IN THE ORIENT

THE April issue of that admirable periodical *Ophthalmology* (April 1914, Vol. X), has several articles on eye surgery in India, viz., Elliot's Sclero-conjunctival Trophectomy, also a detailed and well illustrated discussion on Smith's intracapsular operation and a very interesting note of personal experiences by Dr. Flavel B. Tiffany, of Kansas city, at his visits to the Bombay, Calcutta and Amritsar clinics, from which we make the following extracts—

"At Bombay we visit Major McPherson's clinic. He does not think well of Smith's operation for cataract, even when it is made by Smith himself. He calls my

attention to some data gathered by his predecessor, Major Kilkelly, relative to the twenty-three operations Smith made in their hospital. These show a large per cent of loss of vitreous, of prolapse of the iris and of hyalitis. Major McPherson says that while he occasionally makes the operation, whether by accident or not, he does not think it safe and does not as a rule make it. He thinks it is better adapted to hypermatue cataracts, which are found more frequently in India than elsewhere. He says he certainly would not practice the operation in Europe.

The first morning I am with Major McPherson he makes twenty-two extractions, and makes an iridectomy in each case. The lids are held apart by an assistant. McPherson makes a large and rapid incision, which he finishes by a to and fro movement. The incision is made at the limbus or slightly within the sclera, and he always seesies a conjunctival flap. He uses the drop toothed forceps for removing the anterior portion of the capsule. This method he says prevents the necessity for any subsequent needling. In some cases, especially if the patient is unwell or the vitreous is soft, he uses the cystotome instead of the forceps. He dislodges and removes the cataract with the strabismus hook. In cases where the lens is already dislocated he extracts it within the capsule. He invariably irrigates the anterior chamber with a normal salt solution, sweeping out all of the cortical portion or débris. For this flushing he uses a fountain syringe with a metallic tip or point. The tip is attached to a long rubber tube which is connected with a flask of the saline solution held by the nurse. The force of the flow the nurse regulates by raising or lowering the flask. After irrigating, Major McPherson carefully replaces the angles of the iris and the conjunctival flap. He always instils atropia and keeps the pupil dilated for a week or ten days. In some cases he uses dionin the third or fourth day. Before applying the bandage he smears a little boiled or sterile vaseline on the margin of the lids. He believes this to be a precaution against infection. He applies a light bandage and allows the patient to sit up, and walk to the toilet room the second day. He removes the bandage from the fellow-eye on the second day, and from the eye operated on the third or fourth day.

If the cataracts are mature in both eyes Major McPherson removes them the same morning. To-day there are several double operations. He says that these patients will not return for a second operation, and he has never seen any bad results from operating on both eyes at the same time. In his large clinic, with so many cataracts, he uses the same knife forty or fifty times before sending it to London for repair.

He makes the trephining operation of Elliot of Madras for glaucoma. But he says that he does not have many cases of acute glaucoma, for these Indian people as a rule come only to be operated on for cataract, and do not seek surgical advice as long as they have considerable vision. If they have glaucoma they usually endure the pain and do not consult the oculist until they are blind.

Major McPherson dwells especially on the importance of examining the lids and lacrimal sac to see if there is any infectious disease present before making an operation. If there be dacryocystitis, he extirpates the sac. If trachoma exist, he expresses the granulation and gives local treatment of silver nitrate for a week or ten days before operating for cataract. If there be a pterygium, he dissects the apex loose, clips it off and stitches the detached portion under the upper edge, covering up the coloboma, but he does not fold or tuck the pterygium on itself.

He has innumerable cases of trachoma and its sequelæ such as pannus, ulceration of the cornea, staphyloma, conical cornea, superficial and interstitial keratitis, abscess of the cornea, perforation, hernia and synechia, entropion, trichiasis and distichiasis, and even panophthalmitis.

Besides the score of cataract operations to day, Major McPherson has several iridectomies and a number of

discussions. For soft cataract he makes a discussion, followed the next day by tapping and evacuation. He does not approve of needling for high degree of myopia. He fears a subsequent fluidity of the vitreous and detachment of the retina.

In addition to the twenty-five or thirty operations of the morning, McPherson has something like a hundred cases of various diseases of the eye requiring local treatment. For chronic iritis, for high degrees of myopia, for keratitis or opacities of any portion of the eye, he uses cyanide of mercury 1/2500, injected under the conjunctiva. But of the solution he uses only 5 minims.

For the advanced student of ophthalmology the clinic in Bombay offers one of the finest opportunities to become familiar with the various diseases of the eye, and to practice eye surgery that I know of in the world.

At Amritsar, in the Punjab, I met the celebrated surgeon, Colonel Henry Smith, and witnessed some of his work. He is really a general surgeon, but he does a great deal of eye work. He tells me that he has already made more than thirty thousand extractions of cataract. His operations are intracapsular.

I am especially interested in one case in which there is a posterior synechia consequent to iritis, for it occurs to me that if there is to be any loss of vitreous it will be in a case of this sort. Colonel Smith makes a large incision, embracing nearly one half of the perimeter. He cuts close to the limbus, but slightly within the cornea. In this case where there is synechia he makes an iridectomy, but before extracting the lens he removes the speculum and trusts to his assistants to hold the lids apart. With the strabismus hook he presses upon the periphery of the lens at the lower portion, and with a slight manipulation dislodges the cataract from its bed when the upper part immediately presents itself within the wound, and he whips it out within the capsule without loss of vitreous. In connection with this case he remarks that the adhesions in an old synechia easily give way, and that there will be no iritis following the intra capsular extraction, while if he had made capsulotomy there would almost certainly follow a post operative uritis.

Colonel Smith says he makes capsulotomy only in very young people. He thinks that the older the patient, other things being equal, the easier it is to remove the lens within its capsule without loss of vitreous.

He does not as a rule make an iridectomy. Instead, after the extraction he stabs the iris near its ciliary border at right angles to the radiating fibres, and so secures a button hole. He says it is a difficult matter to make a button hole iridectomy, while this stabbing or iridotony is easily done and serves the same purpose. He admits that the point of the knife pierces the hyaloid membrane and enters the vitreous, but he thinks that this is of no consequence, as the vitreous does not flow through this small incision.

For infantile or soft cataract, instead of making a discussion, he makes a small incision at the limbus the same as for extraction, then with the drop toothed forceps he goes through the lens into the vitreous, pinching out a portion of both capsule and lens. He frequently makes an iridectomy in these cases.

Colonel Smith usually uses a sprung speculum without any fixation, so he cannot regulate the tension. In one case on his finishing the incision the patient screws down the eye, and before the Colonel can remove the speculum the lens shoots forth in its capsule, with a large portion of the vitreous following. The vitreous Smith wipes away with his finger, saying that the loss of some vitreous does no harm. Without clipping the hyaloid membrane he smears some yellow oxide over the margin of the lids and applies the bandage.

The case following this is more favourable, and he makes a very pretty operation, removing the lens in its capsule through the pupil. He follows his usual practice of stabbing the iris instead of making an iridectomy. He tells me that he is now having some special spear-point knives made for this stabbing operation. I suggest

that the iridotomy could be made more easily and with less danger to the vitreous if he used scissors instead of a knife.

Colonel Smith does not allow his patient to get up for a week or ten days after the operation, and during this time the eye is not dressed unless there be some untoward symptoms.

He does not think so much of asepsis as of antisepsis, and it is his custom to flush the eye before and after the operation with a weak solution of bichloride of mercury. His instruments he runs through a strong solution of carbolic acid, and then rinses them in sterile water before using. He believes that asepsis alone will do very well for America and Europe, but not for India. He does not seem to take the same precautions that we do against infection. Patients having various diseases, such as trachoma and purulent ophthalmia, are brought into the operating room, examined and treated while cataract patients are on the table waiting to be operated on. He operates in his business suit, and his assistants wear their ordinary clothing. The dirty wrappings of the patients are not removed. Yet notwithstanding all of this, Smith assures me that he rarely has any post-operative infection—not more than 1 per cent. Of course, we must remember that his practice is largely confined to Indians of a lower physical and nervous organism. It would be interesting to know how modern surgeons working on highly organized people would look on his method.

In his post operative cases that I see, I notice a large per cent of eccentric pupils, the iris having been caught up in the wound. In view of these considerations I am not at all favourably impressed with the intia capsular operation. And my observations, not only with Smith, but other oculists in other parts of the world, lead me to conclude that the operation will never become generally popular.

Colonel Smith tells me of his new treatment for incipient cataract—that is for the very early stages when there is a lowering of vision without any perceptible opacity of the lens. He says that in these cases the patient can see slightly better in dim or twilight, or in other words, when the pupil is slightly dilated. It is in these same cases that the vision a little later on is better in bright light when the pupil is contracted. Colonel Smith believes that all people after a certain age lose somewhat the transparency of the lens, and that if they live long enough they will become cataractous. This is especially true, he says, of the people of India, who mature at an age early. This premature senility manifests itself especially in a lowering of vision for near objects, even when there is no arrest of accommodation and when no glass can be found that will restore the normal vision. In other words, such cases indicate not presbyopia, but the early stages of cataract. In such cases Smith thinks that he is able not only to arrest the disease, but even to dispel it. This he does by a subconjunctival injection of cyanide of mercury, a solution of one to six thousand. Of the solution he uses thirty minimis at one injection and if necessary, after an interval of six weeks, he repeats the treatment. The object of this treatment is to create hyperemia, and thus to promote absorption. The solution causes intense pain and necessitates a thorough cocaineization of the eye, prior and subsequent to the injection. In addition, Colonel Smith gives a quarter of a grain of morphia sulphate hypodermically. He claims priority in this abortive treatment for cataract. He has been experimenting with it for some time, and is so convinced of its efficacy that he expects to bring it before the International Medical Convention at St. Petersburg in 1914. I learn later in various clinics that the treatment is not regarded with unqualified favor by other oculists.

When we reach Calcutta we find that medical conditions are much the same as in Bombay, Amritsar and other places in India. The majority of diseases being those of the eye, the general surgeon must be especially

skilled in ophthalmology, and he frequently becomes better known as an oculist than as a general surgeon.

At the Medical College in Calcutta Lieutenant-Colonel Maynard is professor of ophthalmology and otology, and he is chief surgeon in charge of the Mayo-hospital as well. He has several native assistants, but does all the capital operations himself. His assistants are college bred men having the equivalent of an A.B. degree.

Colonel Maynard is an extremely busy man. He examines and records all new cases personally, in addition to treating from seventy-five to a hundred old patients each day. Tuesdays and Fridays are his operating days, and he frequently makes as many as twenty-five or thirty operations in a morning.

This morning he calls at my hotel at seven o'clock, long before the usual breakfast hour here in the East, and in his automobile he takes me to the Mayo hospital, which is named, by the way, in honour of a former viceroy who did much for India during his administration.

Among the general cases that I see this morning is one of cholera, in which there is an apparent sub temperature.

My attention is called to a very severe case of symblepharon, in which all four lids are badly burned. The burns are the result of the patient's attempt to consume herself on the funeral pyre of her husband. Colonel Maynard says that this practice still exists to a certain extent in India, although it is a criminal offence.

I notice two cases of luxated lens, in each of which the lens is floating in the vitreous. Both cases are the result of couching done by the itinerant Hindu oculist. For couching is still practised in India by the mounted banks or chitlatans. These men know nothing of medicine or surgery, though they have learned the value of cocaine, and they now use a needle to make the operation instead of a sharp thorn of former days.

He tells me, too, that they are likely to pull the bandages from their eyes in order to test their vision, but that, as a rule, no serious results follow. For he thinks that it is safer for the eye to be uncovered than to be bandaged too closely. He says that if a sound eye is tied up for thirty-six hours there will be a secretion that will glue the eyelids together. He thinks that a thick, tight bandage acts as an incubator or nidus for infection.

In going over the cases to day Colonel Maynard selects eighteen or twenty cases upon whom he is to operate in the morning.

The first operation the Colonel makes the following morning is Elliot's trephining operation for glaucoma. He says that this operation did not originate with Elliot of Madras, but with a Scotchman in Glasgow. It is true, however, that both men were making the operation at about the same time, and neither knew the other was doing it.

Colonel Maynard tells me that he operated for some time in conjunction with Colonel Smith, and that he now uses Smith's operation in about thirty per cent of his cataract cases. He thinks that the intia capsular extraction is adapted to hypermature cataracts, and he says that most of the Indians do not seek surgical advice until the cataract is over ripe. He adds that it has been his experience to find that the hypermature cataract frequently presents itself as soon as the incision is made. So accidentally we all occasionally extract cataracts within the capsule. And he thinks it was probably by accident that Smith first made the operation which he now makes from choice. In Colonel Maynard's opinion, the operation is not at all adapted to European or American cases. He says that if he were practising ophthalmology in Europe he certainly would not use this method in his private practice, it involves too great a danger of loss of vitreous, and subsequent deterioration of the globe. He believes with all pathologists, that the vitreous loss is not restored, as Smith claims, but replaced by aqueous humor.

In operating for cataract Maynard makes a large incision, embracing almost half of the perimeter of the cornea. Instead of fixing the eye at the insertion of the inferior rectus, he grasps it near the insertion of the internal rectus or opposite the point of puncture. After making the incision with a conjunctival flap, he tries the lens, and if it seems to present itself readily and easily, he makes the Smith operation. Otherwise he always makes cystotomy, and in doing this he makes an extensive peripheral incision near the margin of the pupil. He occasionally irrigates the anterior chamber, but in the majority of cases he tries to remove all of the cortical portion by means of the curette. He says he would not dare to irrigate or syringe with a mercurial solution. He thinks that the normal salt solution is the only one that should be thrown into the anterior chamber, and that this solution should have the normal temperature of the body, and be introduced into the chamber with not too much force.

For soft cataract he makes his puncture either at or slightly beyond the limbus. He says he has had infection and even sympathetic ophthalmia following a puncture made within the cornea, but never any such results following the operation that he now makes.

I am a little surprised this morning to hear a graphophone start up about the time that Colonel Maynard begins to operate on a very nervous Parsi. The Colonel tells me that in cases of extreme nervousness he uses this means of diverting the patient's attention from the operation.

Colonel Maynard does not think well of the cyanide of mercury treatment for incipient cataract. He says that the treatment not only produces intense pain and a great reaction, but causes cicatrical adhesions of the conjunctiva to the sclera which even hamper the movement of the eyeball."

THE DIAGNOSIS OF THE MINOR FEVERS *

II

As our readers are well aware, this is a subject of great interest at present in India, and we here give a short account of a discussion on the subject at the Society of Tropical Medicine and Hygiene, London (*Trans.*, Vol. VI, No. 7, June, 1913). The subject was introduced by Lt-Col Burt, R.A.M.C., who has done good work in differentiating the sand-fly or phlebotomus fever of the Mediterranean basin. We will first give some extracts from Lt-Col Burt's paper and then quote some of the opinions given in the discussion which followed —

In the Army Medical Reports date from 1817, and the Statistical Reports on the Health of the Navy from 1830, we meet with excellent clinical pictures of sand-fly fever in these volumes, and we learn how widely prevalent it was during the summer months throughout the whole Mediterranean area, including Gibraltar, Malta, the Ionian Islands, Greece, Cyprus, Crete, Asia Minor, and Egypt.

In 1905, TAUSSIG contributed a masterly article to the *Wiener klinische Wochenschrift* on the short fever which breaks out every summer among the Austrian troops stationed on the Adriatic coast in Bosnia and Herzegovina. He adduced epidemiological evidence that the phlebotomus, a figure of which he gave, should be regarded as the agent in the transmission of the disease. Our Indian investigators were thus foreshadowed, though McCARRISON stated in a paper on a kindred ailment in Chitral, which he had studied in 1903 and 1904 (insetted

in the *Indian Medical Gazette* of 1906) "with regard to suctorial insects, sand flies are those most likely to be implicated. Their appearance corresponds in a striking way with the appearance of the disease, and the fact that they are not found where the disease does not prevail may be more than a coincidence. Experiments in my hands have, however, failed to throw any light on this point. The very great difficulties in working with sand-flies may be responsible for this lack of result." And further on "the use of sand fly and mosquito proof curtains is also essential, as much for the sake of comfort as for the possible protection which may be afforded against the disease." FOOKS, writing in the *Indian Medical Gazette* of 1908 and 1910 of an outbreak of about 100 cases of a similar fever in 1899, at Landi Kotal, a frontier post west of Peshawar, stated that he thought that sand flies were the means of conveying the infection, since there were no mosquitoes, but the sand flies were abundant. His opinion was confirmed by a study of another epidemic at Sialkot in 1907.

India is the country in which cases of sand-fly fever are most numerous. Reference has been made already to McCARRISON's and FOOKS' accounts of the disease at Chitral, Landi Kotal and Sialkot. Wimbley described an epidemic which prevailed at Nowshera in 1910. Wall has given an account of the Chitral outbreaks of 1909 and 1910. C H Hale reported an epidemic in Kamptee in 1911, he found that camphor is effective in driving away sandflies. Robinson and Blackham state that the malady caused 848 admissions to hospital among the British troops of the Peshawar Division in 1911. Taylor and Khan observed 161 attacks in the Indian troops at the frontier post Parachinar during the months of June to September, 1912. In the *Annual Report of the Sanitary Commission with the Government of India for the year 1910*, published in 1912, the total number of cases of sand-fly fever recorded among the British and Indian troops is 1,058. It is doubted whether the great importance of this disease as a cause of disability of our troops has yet been widely realised, it is probable that there were some four or five thousand attacks in all. The *Army Medical Report* of 1911 gives 1,393 admissions on account of sand fly fever among the British troops alone stationed in India in 1911.

The phlebotomus is abundant in Ceylon, and our troops have suffered from the fever.

About 70 or 80 cases of this ailment are recorded each year in the returns of our troops stationed at Hong Kong and the Straits Settlements.

At Tientsin and Pekin, in 1911, 45 cases occurred in the British garrison where sand flies were most numerous.

The sand-fly is widely distributed in the French possessions in Africa. Langeron reported its existence on the coast of Tunis.

Summarising the successful experiments, we find that —

Inoculation with the blood of dengue sufferers caused dengue eight times.

Inoculation with filtered infective blood induced the disease twice.

Inoculation with the salivary glands of an infected culicoid gave rise to dengue once.

Infection has been conveyed by infected culicoids eight times.

Infection has been conveyed by infected stegomyia once.

There are considerable differences in the infectivity of the virus in sand fly fever and dengue. Blood abstracted after the first twenty-four hours in the course of sand fly fever no longer can excite the disease. It has failed to do so in every attempt (five experiments made). The blood of dengue patients with which the successful inoculations were performed was drawn off on the second to the fifth days of the disease.

Whereas phlebotomi are not capable of transmitting sand-fly fever until six days after feeding on a sand fly fever patient who is in the first day of his illness, dengue has been conveyed by mosquitoes immediately

after their meal of dengue blood, nevertheless the virus survives in them, for they have conveyed the disease 8-27 days after feeding on a dengue sufferer.

Graham protected families from dengue by means of mosquito curtains. E. H. Ross extinguished epidemics of dengue which had been of yearly occurrence in Port Said by exterminating the mosquitoes. Stitt prevented the spread of infection from 200 dengue patients to others in the same ward by enclosing the former in mosquito proof wire cages.

The evidence is accumulating that the stegomyia is an agent in the propagation of dengue. Legendre concludes from a study of an extensive epidemic of dengue at Hanoi in 1910, that the stegomyia was the responsible vector, since the outbreak was coincident with a great increase in the number of these mosquitoes, while other species were few. The arrest of the epidemic was marked by a diminution in the stegomyiae and an increase in the other mosquitoes. Davidson remarks that stegomyiae were everywhere during the recent outbreak of dengue at Brisbane. Lalor, cited by Surgeon General Lukis, believes that the short fevers which are prevalent at Rangoon are conveyed by stegomyia.

That there is some connection between epidemics of dengue and yellow fever has long been noted. In Bermuda, in the year 1863, there was an autumn outbreak of dengue, which was followed in the next summer by a disastrous epidemic of yellow fever in which over 3,000 out of a population of 11,450 persons were seized. The epidemics were connected by the occurrence of atypical febrile cases in the interval. In 1881 at Malta there was an outbreak of dengue during the autumn, and 69 cases of yellow fever then occurred among the troops.

There is a close resemblance between the dengue, sand fly and yellow fever infections, they are all caused by some virus which circulates in the blood, and is capable of passing through a filter which retains bacteria, the onset of the fever is similar in many instances, and during the first forty eight hours of the illness it may be impossible to distinguish between the infections, even later a diagnosis on clinical grounds may be unattainable, for atypical cases of dengue and yellow fever may bear every likeness to phlebotomus fever. Hence too great stress should not be laid on the symptoms of individual patients during the course of an epidemic, it is the general type of case which will give the name to the outbreak.

We now come to the consideration of those fevers which Rogers has described as "sporadic seven day fever simulating dengue." The name is hardly suitable, perhaps, for of the 206 cases on which his report is based, in 66 only was the duration of the pyrexia seven days, in 79 it was six days, and in the rest it varied from three to more than eight days. The leucopenia, slow pulse, and rashes cause little hesitation in identifying this disease with dengue. From the blood of six patients, however, a bacillus bearing many of the characters of the *B. typhosus* was isolated, but since 1907, the date of the report, there has been no more positive evidence of the bacterial nature of the fever. Megaw, who himself was a sufferer, believes that it is a mosquito borne malady. Fleet Surgeon Clayton has given powerful reasons for the belief that the so called seven day fever of eastern ports is conveyed by mosquitoes. Butler remarks that many cases which occurred in the 1911 Brisbane dengue epidemic conformed to this type.

In 1909 the writer was sent to Malta to look for the fever investigated by Doeri. He arrived before sand flies had made their appearance, and before the outbreak of phlebotomus fever. In April and the beginning of May six cases came under his notice in which the duration of the pyrexia was from five to ten days. In all of these 5-10 c.c. of blood remained sterile permanently, the serological and microscopical examinations for parasites were negative, leucopenia and a

slow pulse were observed in every instance. These cases, therefore, resembled many which occur in dengue epidemics. After the commencement of the sand-fly fever season, eight more attacks with pyrexia varying from 5 to 16 days, were investigated, with similar results. The conclusion seems justified that these were mosquito borne infections. Sporadic cases of yellow fever may occur, and there is no inherent improbability that isolated examples of dengue should arise. The cases of greatest severity appeared in the autumn months when the stegomyiae were becoming more numerous, and it is not unlikely that they were the transmitting agents. Surgeon Major Missud, of the Royal Malta Artillery, informed the writer that occasionally he had encountered febrile cases in which bilious vomiting and jaundice were prominent symptoms, suggesting that the stegomyia was the cause.

We should not be content with such terms as "3 day," "7 day," "10 day" fevers, for such expressions are inaccurate, no fever keeps time so precisely, "remittent fever" and "pyrexia of unknown origin" are convenient names to be employed when we are overworked and fatigued. In perusing the literature of fevers we see how much more preoccupied the writers have been with a search for a name than with finding out the cause of a disease. Much energy and ink have been expended on discussing whether a fever is "Bull's disease," Weil's disease," "yellow fever," "bilious remittent fever," "3 day," "7 day," fever, and so forth, when an appeal to experiment would have answered the question and would have saved lives.

It would be a distinct gain to the cause of public health if infections were designated by their transmitting agency. The names "rat fever," "louse fever," "bug fever," "tick fever," "goat milk fever," "mosquito fevers," bring vividly to the notice of the public their dangerous foes, and we thus educate them in the means to be adopted in the prevention of disease, and enlist their services for their suppression.

Dengue, phlebotomus and yellow fevers are caused by distinct but closely related kinds of virus.

A fever lasting several days in which the examination of the blood for parasites, by culture, and by serum tests, is negative, characterised by slow pulse, leucopenia, and relative polynuclear decrease, occurring in a locality where mosquitoes are numerous, should be attributed to a virus carried by these flies, although some of the symptoms significant of dengue or yellow fever may be wanting.

In the discussion which followed Surgeon-General Sir Havelock Charles, G.C.V.O., I.M.S. (1st ed.), who gave some personal experiences of dengue and states that in his opinion dengue and sand-fly fever were two distinct diseases, Dr F. M. Sandwith emphatically stated that sand-fly fever was "as different from dengue as chalk from cheese," but he hinted that he would not be surprised if dengue and yellow fever were in some way connected. He also said that he believed what L. Rogers called 7-day fever was dengue and the "saddleback chart" was common in dengue cases in Cano. Fleet-Surgeon P. W. Bassett-Smith from naval experience at Bombay believed in the identity of 7-day fever and dengue, and so also did Dr. J. M. Atkinson from Hong-Kong experience. The following remark is worth quoting —

"In 1902 we had dengue, typical dengue, in Hong Kong. There were hundreds of patients under treatment in the hospital, all presenting practically the same features. The attack consisted of three days' fever, three days' intermission, and the terminal fever on the sixth or seventh day accompanied by the distinctive secondary

roseolar rash. Eighty per cent of the patients shewed the secondary eruption. It is quite distinctive in dengue, one does not meet with this secondary rash in any other disease. At the docks, for instance, in Hong Kong, where they employed some 600 to 700 Chinese, no less than 200 to 300 of the Chinese were knocked down with the fever within a few days. I think this tends to shew that the disease is spread more from person to person. In its sudden onset, rapid diffusion, and the great proportion attacked in a community, it very much resembles influenza. You could not imagine 300 persons bitten in one day by an infected mosquito. The way the disease was spread was from person to person in each house. You had a case in a house, and practically everyone in that house who had not had the disease contracted it. At the Civil Hospital, for instance, two thirds of the Sisters were laid up, and many of the patients contracted the disease. There were very few mosquitoes to be found in the building at that time. It is a disease which occurs in Hong Kong only in the summer months, and I think there can be no doubt that the two diseases, dengue and phlebotomus fever, are quite distinct and separate.

It will be noticed that the trend of opinion is towards establishing the difference between the short or 3-day type of fever (sand-fly, phlebotomus) and the longer or 7-day type which a majority of observers now hold to be endemic or epidemic dengue. Whatever may be the result, we in India are greatly indebted to Lieutenant-Colonel L. Rogers for calling attention to this 7-day type and clearly differentiating it from malaria, etc. This work will remain, whether it is universally agreed or not that 7-day fever is dengue.

Correspondence.

INDIAN MEDICAL SERVICE

DECLINE OF BRITISH MEMBERS

To the Editor of "THE TIMES"

SIR,—In your issue of the 15th, Sir Malcolm Moiris, is the result of his recent tour in India, has been able to give a succinct and accurate account of the invaluable work carried out by the Indian Medical Service in its relation to the Indian Army in peace and war, to the health and welfare of the civil population, and to the important subject of research on tropical diseases. These observations have been endorsed by Lord Sydenham, as indeed they must be by anyone having the smallest acquaintance with Indian administration.

But what is to be said for the folly of a Government which has driven the European members of that Service to such a state of exasperation that, in the words of the Council of the British Medical Association in a recent representation to the Secretary of State, "Its own officers are spreading widecast their warning through the British schools and advising the young medical man to 'wait and see' what is to be the next move, before he links his fortunes with a Service which may bring him nothing but disappointment," and which, by an attitude of indifference, if not hostility, to its medical servants, has produced such a feeling of want of confidence that this Service, famous for its professional efficiency, is likely soon to sink to the conditions which characterized the Army Medical Department a quarter of a century ago?

The verdict can only be that there has been grave administrative folly in bringing about such a state of affairs. Not only are the young Englishmen of promise not coming in to the Service, but the Englishmen who are already in it are coming out of it as fast as the inadequate scale of the pensions permits them. The Government of India have refused to recognize the great increase in the cost of living which has taken place in the last 15 years, have added to the burdens of their medical servants by throwing obstacles in the way of the acquisition of private practice, and have lowered the prestige of the I. M. S. throughout India by their foolish regulations on

the subject of fees, some of them so impracticable that withdrawal was necessary a few months after publication. The furlough regulations have been rendered null and void through the undermanned condition of the Service, and officers apply in vain for furlough long overdue under the Civil Service Regulations, and are kept in the country until health and energy is failing, or till a medical board accelerates their departure. On the top of this unsatisfactory condition of affairs came Lord Moir's famous memorandum, which showed the Service that the India Office had capitulated to a small but noisy section of the non official medical profession in India, whose motives are admittedly anti-European. As far as the Service knows, this memorandum still represents the views of the India Office and there will be no restoration of confidence until it is publicly withdrawn.

Little wonder, therefore, that every retired officer and every I. M. S. man who comes to this country on furlough is the very reverse of a recruiting officer for the Government of India. The Englishmen in the Service are of one mind that until the Government of India learns to treat medical men with justice and consideration, and until it realizes the obligations of a contract with members of an honourable and very efficient profession, the young Englishmen of high professional attainments who formerly competed for the Service shall not be allowed to enter without full knowledge of the sort of life and treatment which they may have to expect. The organization of the British Medical Association will be utilized for the same end. There will, however, be no lack of candidates. The numerous medical schools in India are already supplying them, and in time the composition of the Service will become almost entirely Indian. But it will not be composed of the best class of Indian graduate, for such already realize that their position and prospects are better outside the Service.

Your obedient servant,
AN ENGLISH GRADUATE, I. M. S.

[The above somewhat pessimistic letter to *The Times* (22nd May) has been sent to us for republication.—ED., I. M. G.]

DATES OF I. M. S. COMMISSIONS

To the Editor of "THE INDIAN MEDICAL GAZETTE"

SIR,—Would you very kindly publish this information for my brother officers in batch dated 1st September 1906?

In Seton and Gould's Book on the I. M. S. pages 8, 25, 116, 117, also A. R. I., Vol. I., para 732, it is stated that an Officer's Commission dates from the day on which the result of the Competitive Examination into the Service is announced—this applies to all those admitted into the Service after 1st September 1902.

Our Entrance Examination result was announced on Saturday, 30th July, 1906—this being the same date on which R. A. M. C. Officers' Examination results were announced, and from which day their Commissions date.

Our Commissions are dated 1st September 1906, but from the above quoted dates it would appear that they ought to be 30th July 1906.

In view of the above, I have applied to the Government to have the date of my Commission reconsidered.

MALAKAND, }
10th June, 1914 }

I am, Sir, etc.,
S. HAUGHTON,
CAITAIN, I. M. S.

[This certainly seems wrong. The date of previous batch is 1st February 1906 and the next batch should be 1st August 1906. There may be some reason for this, but it is not apparent, since 1st September 1901 the dates for the yearly batch are 1st February and 1st September, if so, why say from date result of examination?—ED., I. M. G.]

REDUCED FEES FOR MEDICAL EXAMINATION IN LIFE ASSURANCE

To the Editor of "THE INDIAN MEDICAL GAZETTE"

SIR,—Would you very kindly publish the undermentioned letters for the information of my brother officers.

(1)

1st May, 1914

"DEAR SIR,—Your letter dated 27th ultimo to the address of our N. Agent has been forwarded to us for attention, and in reply we write to say that we pay Rs 10 for cases of Rs 2,000 and under and Rs 16 for cases above this amount.

As many officers in the R. A. M. C. and I. M. S., have agreed to examine at the Company's scale of fees, we hope you will agree to our terms and will accept Rs 10 for the examination of Mr A. B. C. We will pay you Rs 16 for cases over Rs 2,000 for each examination.

Should you not agree to this scale of fees we will send you Rs 6, but cannot give you any future cases for examination

To CHIEF AGENTS
CAPTAIN S HAUGHTON, I M S

(2) 6th May 1901

"DEAR SIR.—We have received your favour of the 3d inst which we are forwarding to our Head Office requesting them to send you an additional cheque for Rs 6 for your examination of Mr A B C

In future please note to examine no cases for this Company whether for Rs 2,000 or over, unless especially asked to do so by an Agent of the Company

To CHIEF AGENTS
CAPTAIN S HAUGHTON, I M S"

MALAKAND, }
10th June, 1911 }
Yours etc.
S HAUGHTON,
CAPTAIN, I M S

[We fear this is not a solitary experience. The principle is utterly wrong. The value of the medical opinion is the same whether a man insures for a thousand rupees or for a lakh. In all cases the amount of the fee should at least be clearly stated before the examination is made.—ED, I M C]

THE TREATMENT OF MALARIA

OPINIONS ASKED FOR

To the Editor of "THE INDIAN MEDICAL GAZETTE"

SIR.—What is the proper treatment of Malaria? In South America, in Africa and chiefly in Burma I have treated many thousands of cases alone and with other doctors, and have rarely found two doctors who have precisely similar views.

It seems to me that to decide on the right dose and method of administration, that is on the dose and method which will with certainty permanently cure my infection with malaria, it is almost necessary to invent some definite proof of cure, or of infection such as the Wasserman test for syphilis. Is this beyond our laboratory experts?

Treatment with me has been as follows—

For serious cases where the patient has appeared to be in danger of losing his life, or where there has been a very high erythrocyte infection, venous injection of seven grains of quinine bishydrochloride boiled in twenty minims of the nearest water procurable. Repeated in four hours and again in 4 hours, twenty one grains in all.

Now I read that such injections are dangerous that the quinine should be freely diluted.

Are they really dangerous? Are there records of bad results occurring in practice? Or is this danger only theory?

I have given about 200 of these injections without any unpleasant symptoms.

And they are readily given, our hypodermic syringe is always with us, but preparation of an intravenous infusion apparatus may lose us most valuable time.

In ordinary cases, for many years I administered doses of 5 grains of the sulphate three times a day.

While fever was present or the digestion upset I have always insisted on the administration of quinine in solution, for it has often been stated that under such conditions the intestinal secretions may not dissolve the solid. Is this merely theory, or is it fact? Has the undissolved quinine ever been recovered from the faeces?

This is really an important point, for to some people the taste of quinine is so unpleasant that they can barely be persuaded to take it in solution.

The general trend of opinion seems to be in favour of large doses, many of my patients have returned with malaria, whether re-infections or relapses it does not seem possible to decide, of late years, I have therefore increased the dose to 10 grains three times a day.

This is continued for fourteen days, then twenty grains a day for a month, usually as tablets then 10 grains a day for another month with a tonic of iron and arsenic.

But such doses are purely empirical I do not know whether more heroic doses would cure more certainly and quickly as the Panama reports seem to suggest, or whether smaller doses might not be just as effective.

Again, there is the question of subcutaneous or intramuscular injection. It is the fashion to decry this method of administration.

We all know that the native physician in general refuses to give quinine during the fever—he gives diaphoretic until the temperature falls. I believe, this is not because he con-

sider's quinine during the fever dangerous or useless, but because he knows how intensely distressful it is at this time to the patient. Anyone who has experienced malarial fever will agree with this. When life seems not worth living, you ache all over and can get no rest and feel on the point of vomiting, bitter acid quinine is the last straw.

At this stage a quinine injection you do not mind, and it probably hastens the cure.

There is another class of cases who frequently suffer from slight fever or malaria, neuralgia or headache, without getting a severe attack whom quinine by the mouth seems not to affect, possibly they have lost faith and do not really take it. In many such cases I have given four intramuscular injections with the result that they have been entirely well for many months during which I have been able to watch them.

What are the objections? Slow absorption has been given as one, but surely if quinine takes 4 to 6 days for excretion it makes little difference if it is absorbed in one or twenty four hours.

Danger of Tetanus? How many such cases have been reported? Is there any proof that the skin and syringe were properly sterilized in such cases?

I suppose I have given 3,000 injections very many doctors must have given as many. If there were any real danger we should have heard of scores of cases of tetanus, not of one or two only. On clinical evidence only, I feel convinced of the value of this method of administration, though I know of no scientific basis for it.

Is it certain that quinine reaches the blood in the same form from the stomach and from the connective tissue?

If this question of method of administration and of dosage cannot be settled in the laboratory, surely some near approach to settlement can be made from the vast mass of clinical material available in this country of India.

A comparison of the methods of treatment in all the different provinces would throw much light on the problem.

It would be a work worthy of your pen to collect opinions from all over the country and give us a definite series of facts by which we could all regulate our treatment.

AKYAB

L E GILBERT (M D.)

[We invite opinions on this practical question and shall be glad to publish them.—ED, I M G.]

AN EPIDEMIC OF MUMPS

To the Editor of "THE INDIAN MEDICAL GAZETTE"

SIR.—An epidemic of a disease which I hesitate to call by the name Specific Parotitis occurred in the Biscuit School, Bombay, in the months of April, May and June of this year.

I hesitate to call it so because practically not one of the cases corresponded entirely with the typical disease as I have seen it before or as it is described in medical books.

The epidemic started amongst the girls in April, fifteen of them were attacked whose ages varied from 7 to 14 years. The boys began to get it towards the end of May and the epidemic continued into June. Ten boys were affected, their ages too varied from 7 to 14 years. The first cases attracted my attention by the very trivial nature of their complaint and by the fact that the submaxillary areas were more obviously swollen than the parotid areas. All the cases amongst the girls showed this. The parotid in not a single case was much enlarged, in some it was slightly, whereas the submaxillary glands on both sides were easily palpable and also the lymph glands in their neighbourhood. There was always effusion into the subcutaneous tissues to a greater or less extent over the swollen glands. In a milder case there was a collar of swelling extending from the angle of one jaw to the angle of the other. The swelling was preceded by a few hours of slight fever. There was never any feeling of illness, never any pain on pressure over the glands or pain on mastication. The fever never rose above 102.5 and in most cases did not reach 100. The swelling was at its height on the 2nd or 3rd day and then declined, the last abnormality to disappear being the submaxillary glands. On examination of the throat the tonsils and fauces were slightly redder than normal, and the former slightly enlarged.

Such is a brief description of the majority of the cases, but at the latter end of the epidemic some of the cases more resembled ordinary mumps except for their triviality.

Several boys had enlarged parotids and very little or no submaxillary swelling, but their parotid swelling was never very large, never tense and never painful. The temperature was as trivial as in the early cases. In these cases the tonsils and fauces were apparently normal. The picture in these latter cases was one of the ordinary mumps of a mild kind and any one being shown them would immediately diagnose "mumps" from their appearance. I think there is no doubt

that the early and the later cases were one in nature. That the submaxillary glands may be involved in mumps is well known, but so many consecutive cases in which the parotid was barely involved at all, followed by several cases in which it was distinctly but slightly affected, leads me to think that this is a disease apart from mumps, in any case, the majority of these cases cannot be labelled Specific Parotitis. I should mention that one of the last cases, a big boy aged 14 years, had as a complication a left sided enlargement of the testis and epididymis. This swelling was moderate in degree and nearly painless to pressure. It lasted about two days and then the same condition appeared on the right side. The orchitis was accompanied by a temperature rising to 103.5°. In this case the parotids were distinctly but painlessly enlarged.

A. W. TUKE,
MAJOR, I M S

nators who preceded him and did all the actual vaccination operations.

Generally, when vaccination is done in villages children are brought from five or six villages into a central village and they are vaccinated by the vaccinators. No doubt it is convenient to the vaccinator and saves him trouble and time, but it is very hard on the poor villagers (rather than womenfolk), who are put to a lot of trouble carrying in winter sparingly clothed babies and coming sometimes from long distances.

I tried the following method.—Children from two villages to be vaccinated in the morning and two in the evening, thus four in the day. Though by this method vaccinator has to do more travelling, children had to be brought only from two villages and these villages will be the centre of vaccination operations next year when vaccination is done. Thus in two years every village in the State will be visited by the vaccinators whom I instructed that they should see to the sanitation of the village, thus serving partly as Sanitary Inspectors, and I intended to develop this idea, but unfortunately I resigned my post last April (1914) and my sanitary scheme remains unfulfilled. I wished at the same time to combine with this a travelling dispensary.

G. L. BATRA,
M.B., Ch.B. (Edin.), D.P.H.
LAHORE.

NO II

Statement showing particulars of vaccination in the "Kapurthala State" during the year 1913-14

No	Tahsil	Form of Vaccination	Total number of persons vaccinated	Under 1 year	Over 1 year	Originally made			RESULTS OF INSPECTION			Unown cases	Total number of successful cases		
						3 Vesicles	2 Vesicles	1 Vesicle	Successful	Unsuccessful					
1	Kapurthala	Primary vaccination	1,535	1,445	91	1,218	319	2	1,116	393	10	4	11	1,524	
		Revaccination	123		123	102	21		8	23	23	62	7	54	
2	Phagwara	Primary vaccination	1,953	1,245	108	297	1,056		237	894	81	33	8	1,312	
		Revaccination	59		9	15	44		2	19	9	24	5	30	
3	Sultanpur	Primary vaccination	1,143	1,081	6	834	299	10	824	289	14	6	10	1,127	
		Revaccination	149		149	84	65		9	16	33	90	1	58	
4	Dhilwan	Primary vaccination	1,445	1,291	154	94	1,351		94	1,302	31	3	15	1,427	
		Revaccination	313		313	24	289		29	62	193	29	44	91	
TOTAL		Primary vaccination	5,480	5,062	418	2,443	3,025	12	2,271	2,983	136	46	42	5,90	
Revaccination			644		644	225	419		19	87	127	369	42	233	

found the difficulty myself for getting the arms cleaned before vaccine was put in and the process is quite cumbersome, where the vaccinator has to do 60 to 80 children a day some, where the vaccinator has to do 60 to 80 children a day. Process is (1) wash the arm with soap and water, (2) with an antiseptic, (3) again with boiled water. If vaccinators know that sahib is not coming, they don't care a bit for antiseptic measure, they hurry through the work, and of course with the result of sore arms and its consequences. If they use the antiseptic lotion and if the arm is not washed with water there is danger of destroying the lymph vaccine, which happened several times, 1912-13, when my supervision became lax.

I tried the "Iodine method" as follows—

"Paint the arm with a swab of T1 Iodine and after sterilizing the lancet in spirit flame perform the operation. Let the lymph dry and no dressing put on afterwards." This method was tried in Kapurthala State when I was there as Chief Medical officer for 2½ years. Altogether 6,124 children were vaccinated during 1913-14, of these 644 were revaccinations and the rest, i.e., 5,480, were primary vaccinations of the latter, 5,390 were successful and of the former 233.

There were very few sore arms as compared with former years.

I am attaching 2 charts showing the results of vaccination, during the year 1913-14 regarding the number of vesicles, age, etc., and the second one shows comparison with former years.

These charts of statements speak for themselves, and as I inspected good many cases, I think the results noted are fairly accurate and the head vaccinator, who has been in service for 30 years, he assures me that the method is very satisfactory, for I made him inspect the results of the vacci-

NO III

Comparative statement showing the number of persons vaccinated, and the number of those who were successfully vaccinated in the Kapurthala State in each undermentioned year

YEARS	PERSONS PRIMARY VACCINATION		REMARKS
	Total Number	Number Successfully Vaccinated	
1901-1902	4613	4192	
1902-1903	6207	5972	
1903-1904	5699	5529	
1904-1905	4827	4673	
1905-1906	5578	5395	
1906-1907	4303	4162	
1907-1908	3796	3638	
1908-1909	3651	3631	
1909-1910	4238	4221	
1910-1911	4363	4313	
1911-1912	4657	4528	
1912-1913	5026	5011	
1913-1914	5480	5390	

"LEOITHIN" AS AN AFTER TREATMENT IN ANESTHESIA.

To the Editor of "THE INDIAN MEDICAL GAZETTE"

SIR.—The after treatment of anaesthesia is a subject of no little importance, as the after effects are at times grave and intractable, though no doubt at present many of them have been prevented and overcome owing to the recent great improvements in the methods of administering anaesthesia, for we all know that the liability to, and the severity of, post anaesthetic complications are proportionate to a large extent to the method and length of the administration.

We know the old maxim "Prevention is better than cure," and this applies more aptly here than elsewhere. It is always safe and better to anticipate complications and take measures to prevent their occurrence rather than treating them after they are well established. Our aim and object must be to plan out more of preventive measures than of curative ones and so in this brief article I do not mean to tabulate the several complications following anaesthesia and their respective treatment.

My only object is to bring before the notice of my fellow brethren how far "Lecithin" can prevent post anaesthetic complications and how, when and why, it ought to be used.

We know that few subjects in medicine have caused more discussion among Physiologists than the theories of the curse of anaesthesia. The most widely accepted theory is that of Mayoi and Overton, and it runs thus, that the anaesthesia is brought on by the action of the anaesthetic upon the Lipoid of the brain cells, forming a sort of chemical combination with it and thus destroying temporarily the functioning power of the cell, and in the process of combination, as Reicher believes, the Lecithin from the brain is dissolved out and enters into the blood stream which when tested is generally found rich in both (Lecithin and Lipoid). Neiking of Dusseldorf has reported, in the *Munchenes Medizinhiche Wochenschrift* for July 20th 1907, the result of his recent investigations about the effect of the administrations of Lecithin, on the actions of various local and general anaesthetics which are used in the present day.

He states that when Lecithin is administered either before or with the anaesthetic, much larger doses are required to produce narcosis than when given otherwise, and if the administration follows anaesthesia, the subject recovers from the effect sooner and the after symptoms are less severe and more transient.

If Major and Overton's theory of anaesthesia is correct, it is believed that the injected Lecithin decomposes the product of chemical combination and attracts the anaesthetics, thus setting free the brain Lecithin and removing the poison from the brain, or if Reicher's theory is the true one, it must be by supplying new Lecithin in the place of that which has been dissolved out by the anaesthesia. Whatever it be, one thing we know for certain and that is this, that Lecithin is a harmless substance; and though our present knowledge about Lecithin and anaesthesia is only a little and insufficient and more or less confined to within the limits of the Laboratory, yet, I hope and fully believe that my other medical brethren will lose no opportunity and time in experimenting the effect of the same on human beings, so that the occasional formidable complications that ensue from anaesthesia that create terror and anxiety in the minds of those who undergo operations under chloroform and the several other anaesthetics may be prevented and removed, and thus bring the death ratio under anaesthesia to zero.

Yours, etc.,

K P K RAMAN NAIR

THERAPEUTIC NOTICES, &c

MESSRS MARTIN and Harris of Calcutta, Bombay and Madras, are agents for the well known chemical products and drugs of E Merck of Darmstadt.

The importance of getting drugs only from a reliable and well reputed wholesale firm is shown by the following facts. A sample of Paraffin liquid was required for medical purposes, on examination the analyst said it was only fit for machinery. In another case 1oz of santonin was examined, purchased from a local wholesale house, and it was found to contain not a trace of santonin.

Santonin is an expensive drug and its price must be paid, cheap so called santonin is useless, and is often nothing more than coloured boric powder or such like. No wonder such "santonin" often fails in cases of sprue, etc.

Our attention has been called to a paper on *Deut Med Woches*, No 38, 1912, by Prof Meyer, in which he advocated the use of DIURETIN in case of bronchial asthma as well as in the cardiac variety.

THE attention of our readers is directed to Messrs. Park Davis & Co's useful pamphlet on Bacterins.

THE attention of microscopists may be directed to the new pamphlet of E LFITZ (18, Bloomsbury Sq, London, W C), in which is described a new binocular microscope, for which many advantages are claimed, including that of less fatigue to the eyes.

MESSRS W B SANDERS Co are bringing out a new work by Prof Crile and Dr Lower on Anoxic Association —

The authors first discuss shock—its kinetic theory, its histological and clinical pathology, and its treatment. Then follow chapters on the principles of Anoxic association, the technique of its application in the administration of the anaesthetic, in abdominal operations, in gynaecological operation, in genito urinary work, in operations for cancer, for ophthalmic goitre, on the brain, and on the extremities.

THE Wellcome Historical Medical Museum is now a permanent institution at 54A, Wigmore street, Cavendish Sq, W, London. It is well worth a visit.

MESSRS BUTTERWORTH & Co (Hastings street, Calcutta), are bringing out the 4th Ed of Dr E M Foote's MINOR SURGERY (Price Rs 15 12), a complete and up to date and concise work on minor surgery, dressing, bandaging, etc. It has no less than 433 illustrations, and 830 pages.

CORRIGENDA

In Major F P Connor's letter on Iodine in Plague in cui May No, the dose mentioned in para 2 should be "8 minims to one drachm," not as given, injection is wrongly printed for "infection."

PUNJAB NOTES

THE annual Indian Medical Service dinner was to be held at the United Service Club at Simla on July 24th, 1914.

AFTER two postponements, the first meeting of the Simla Improvement Committee was held on June 4th under the presidency of the Hon'ble Mr L Porter, ICS. It is understood that one of the first questions to be taken up was that of the improvement of the Simla water supply.

THE subject of pure water supplies is apparently much to the fore at the present time, for the Hon'ble Major Robertson, CIE, Sanitary Commissioner with the Government of India left Simla in June for Aden, to advise in regard to measures to extend and improve the water supply of that station. On the completion of this duty Major Robertson proceeded to England on two months' privilege leave. During his absence the duties of Sanitary Commissioner with the Government of India are being performed by the Director General of the Indian Medical Service, in addition to his own duties.

IT is understood that Lieutenant Colonel E Wilkinson, R RCS, IMS, Sanitary Commissioner, Punjab, has accepted an appointment under the Local Government Board in England, and that he proposes to retire from the service on the expiry of his leave in February next.

LIEUTENANT COLONEL A COLEMAN, IMS, Civil Surgeon, Rawal Pindi, has been granted four months' furlough from June 24th. He will be relieved by Major J G G Swin, IMS, when that officer is set free from his appointment as Civil Surgeon, Lahore, by the return from privilege leave on or about July 6th, 1914, of the permanent incumbent, Lieutenant Colonel D Davidson, IMS.

LIEUTENANT COLONEL D LANE, IMS, Civil Surgeon, Ambala, was granted 42 days' privilege leave from 5th June 1914, and Captain H Mills, IMS, Plague Medical Officer, Ambala, was appointed to officiate for him.

ON transfer to the Punjab, Major J Woods, IMS, was posted as Plague Medical Officer, Gujranwala.

CAPTAIN H G Stiles WEBB, IMS, Deputy Sanitary Commissioner, North West Frontier Province, has proceeded home on three months' privilege leave.

WE regret to record the death of Lieutenant J E Scudamore, IMS, Specialist in Electrical Science, Meerut, under peculiarly sad circumstances. It appears that Lieutenant Scudamore undertook a walking tour from Chakrata to Simla without any companion or servants. It is believed he passed through certain malacious valleys and that he contracted a severe chill and fever as the immediate result of being exposed to a heavy downpour of rain. When news of his condition was received in Simla, he was brought

into the Walker Hospital, but on arrival he was found to be in collapsed condition and he died on Sunday evening, June 7th, his case being hopeless from the first.

His funeral which was attended by Sir Purdey Lukis, K.C.S.I., and all the Indian Medical Service officers in Simla, took place with military ceremonies at the Simla Cemetery, the firing party being supplied from Jutogh.

We desire to offer our sincere sympathy to the friends and relatives of the deceased officer, thus untimely cut off at the commencement of his Indian career.

Service Notes.

THE BIRTHDAY HONOURS LIST

The full list of Birthday Honours was received too late for inclusion in our issue for July.

The 150th Anniversary of the Indian Medical Service has been fitly commemorated by the grant of a Knighthood to Lieutenant Colonel Leonard Rogers who got his C.I.E. in 1912. This reward for splendid and practical therapeutic work has been received as the most characteristic honour in the whole list.

We are well pleased to see the C.B. conferred on Lieutenant Colonel W. Rice Edwards, who won his C.M.G. when on the staff of Lord Roberts during the Transvaal War and on Colonel C. C. Manifold, I.G.C.H., in the United Provinces, who did such good exploration work in China and Tibet for which he received permanent promotion at the time and went over the heads of many batches of men. In the United Provinces he has been responsible for the spread and success of the system of travelling dispensaries to bring the benefits of Western medicine within reach of numbers who are not able to find their way to stationary dispensaries. Three appointments as C.I.E. are also granted to Lieutenant Colonel W. Molesworth, M.B., Surgeon to the 1st District, Madras, to Lieutenant Colonel G. I. H. Bell, I.M.S. for several years Inspector General of Prisons in Burma, and to Major E. D. W. Greig, M.D., whose research work in beri beri, epidemic dropsy, dysentery and cholera is thus fitly recognised. The I.S.O. is given to Mr. E. H. Gadsden, who is now officiating as Inspector General of Prisons, Madras.

Major C. E. Southon, I.V.S. Chief Plague Medical Officer of the Punjab, received the gold Kaiser-i-Hind medal, as also does Hon. Captain W. J. A. Hogan, Civil Surgeon, Murassai-nagar, U.P.

The silver Kaiser-i-Hind is given to Assistant Surgeon C. A. Deane of Secunderabad Station Hospital, and to Miss J. Grant a Medical Missionary at Seoni.

The title of Khan Bahadur is a personal distinction has been conferred on Assistant Surgeon B. K. Aukleswar in Bombay, Khan Sahib Hissmat Ali Khan of the U.P. Jail Department, Khan Sahib Suyid Muhammad Afzal of the Bankipore Medical School and Abdur Rahman, Assistant Surgeon, H. B. Majesty's Vice Consul at Jeddah.

The title of Rai Bahadur has been conferred upon Dr. D. N. Sanyal the Civil Surgeon of Purna, Rai Sahib Pun-lit Shab Ditta of Kotah State, the title of Khan Sahib has been received by — David Baron, Sub Assistant Surgeon, and Sheikh Shams ud din, Senior Sub Assistant Surgeon, Bhai Ganda Singh, the Jailor of Cawnpore Jail, gets the title of Sardar Sahib, and the title of Rai Sahib is given to Sub-Assistant Surgeon Murat Lal of Meerut, to R. P. Binerji of Nagpur, to Sub Assistant Surgeon Har Paresh of Khost colliery and to Dr. N. N. Dutt a practitioner of Riwat Pindi.

In the Military Honours List, 1st Class Senior Sub Assistant Surgeon Ram Singh received the title of Bahadur.

A COMPLIMENTARY dinner was given at the United Service Club Calcutta on Saturday, 11th July to Lt Col Sir Leonard Rogers, C.I.F. and to Major E. D. W. Greig to show the appreciation of the members of the I.M.S. in Calcutta of the honours bestowed on the above officers in the recent Birthday Gazette.

Colonel G. F. A. Harris, C.S.I., F.R.C.P. I.M.S. presided, and the following officers attended — Colonel Banatwala, Lt Col C. M. Green, F.R.C.S., Lt Col W. J. Buchanan, C.I.F., Lt Col W. D. Sutherland, Lt Col Calvert, Lt Col B. H. Derra, Lt Col C. R. Stevens, F.R.C.S., Lt Col Pairy Major Fry, Major W. V. Coppinger, F.R.C.S.I., Major E. O. Thurston, F.R.C.S., Major E. E. Waters, Major H. B. Steen, Major R. P. Wilson, Major Lloyd, Major Foster, Major Hamilton, Captains Hume, Godson, Green Army, Major A. L. Lloyd, J. A. Shorten, Clive Newcome, and also Dr. Hossack, and Dr. Bentley.

WE beg to acknowledge the receipt of twenty five rupees (25) from Lt Col C. R. Stevens, F.R.C.S. I.V.S., Calcutta, for the fund for the upkeep of I.M.S. graves in the Military Cemetery, Calcutta. This sum has been forwarded to the Assistant C.R.E., Fort William.

BRIGADE SURGEON WILLIAM JOHN BUSTEED, Madras, Medical Service, retired, died at Upper Norwood, London, on 27th April, 1914. He was born on 13th January 1833, took the L.R.C.S. Edinburgh in 1857, and entered the I.M.S. as Assistant Surgeon on 23rd July 1858, becoming Surgeon Major on 23rd July 1870, Surgeon Major on 1st July 1873, and retiring with a step of honorary rank on 9th November 1882. Though most of his service was spent in military employment, the Army List assigns him no war service. After serving for two years in Pegu, he had to take sick leave. On his return he served for a while in the Southern Division, in 1863 was appointed Civil Surgeon of Mangalore, and in 1864 transferred to Chingleput. On 6th May 1867 he was appointed to the 25th Madras Infantry, on 27th September 1872 to the 29th, on 27th August 1873 to the 28th, on 19th August 1876 to the 1st, and on 8th October 1879 to the 13th, soon after, in the following year, he took long furlough.

CAPTAIN WILLIAM HENRY BOALTH, I.M.S., died in the Station Hospital, Quetta, on 11th May 1914, aged 34. He was born on 3rd October 1879 educated in the school of the Royal College of Surgeons Edinburgh took the L.R.C.S., Ed., L.R.C.P., Ed., and L.F.P.S.G., in 1904 and entered the I.M.S. as Lieutenant on 1st February 1905, when he was posted to the Western Command. He was promoted to Captain on 1st February 1908. Most of his service had been spent in military employ, and his permanent appointment was that of Medical Officer of the 104th Wellesley's Rifles, which he had held since 22nd August 1910 but he had recently been officiating as Civil Surgeon of Laikhana, in Sind. The Army List assigns him no war service.

WE heartily congratulate Major R. MacCarrison, M.D., on his being elected a fellow of the Royal College of Physicians, London, at the Comitia held on 30th April 1914.

SURGEON GENERAL AYLMER MARTIN CROFTS, C.I.E., K.H.S., Indian Medical Service, Bengal, is permitted to retire from the service subject to His Majesty's approval, with effect from the 25th May 1914, and is succeeded by Colonel Tom Grainger, C.B., M.S., who won his special promotion in the terrible Baikun Valley during the Tirth Frontier blaze of 1897. Surgeon General Grainger entered the service in October 1885, and became Colonel in December 1909 under 25 years' service. He now becomes a Surgeon General at 29 years' service and at the early age of 52 years.

LIEUTENANT COLONEL W. R. EDWARDS, C.B., C.V.C., I.M.S., becomes Colonel in the vacancy caused by the promotion of Surgeon General Grainger. Colonel Edwards becomes Colonel after 23 years' service and at the age of 52 years. If promotion ran on these lines men would have but little to complain of.

LIFUTENANT COLONEL V. G. DRAKE BROOKMAN, Indian Medical Service (Bengal), an Agency Surgeon of the 2nd class, is granted privilege leave for two months and fifteen days, combined with furlough for five months and nine days, with effect from the 1st May 1914.

MAJOR J. R. J. TYRRELL, Indian Medical Service, an Agency Surgeon of the 2nd class, is posted as Agency Surgeon, Bundelkhand, with effect from the 1st May 1914.

CAPTAIN C. I. BRIFLEY Indian Medical Service, an Officiating Agency Surgeon of the 2nd class, is posted as Civil Surgeon, Peshawar, with effect from the 1st May 1914.

LIEUTENANT COLONEL F. O'KINEALY, I.M.S., Surgeon Superintendent, Presidency General Hospital, Calcutta, is allowed privilege leave for three months, under article 260 of the Civil Service Regulations, with effect from the 26th of June 1914.

MAJOR H. B. STEEN, I.V.S., Officiating Civil Surgeon, Patna, is appointed to act as Surgeon Superintendent, Presidency General Hospital during the absence, on privilege leave, of Lieutenant Colonel O'Kinealy, I.M.S.

CAPTAIN A. H. PROCTOR, I.M.S., Officiating Civil Surgeon, Serampore, is allowed privilege leave for twenty four days, under article 260 of the Civil Service Regulations, with effect from the 2nd June 1914.

THE following promotion is made, subject to His Majesty's approval —

Lieutenant to be Captain, I.M.S.

HARRY SLATER CORMACK, M.B., F.R.C.S.E. (provisionally, subject to his having passed the examination held in April, 1914),—28th January 1914.

Captain Cormick's Commission dates from 28th January 1911.

THE services of Captain N N G C MOVEAN, Indian Medical Service, an Officiating Agency Surgeon of the 2nd class, on his return from leave, are placed at the disposal of the Home Department

COLONEL H E BANATVALA, I M S, is confirmed in the appointment of Inspector General of Civil Hospitals and Prisons and Sanitary Commissioner, Assam, with effect from the 2nd April 1914, on the retirement of Colonel R Neil Campbell, C B, C I E

MAJOR F O N MILL, M B, C M, I M S, Superintendent, Central Jail, has been granted, by His Majesty's Secretary of State for India, furlough for ten days, in extension of the combined leave granted him by Order No 435, dated the 26th February 1913

Major F O N Mill, M B, C M, I M S, Superintendent, Central Jail who was granted combined leave by Order No 435, dated the 26th February 1913, was on study leave on the 6th and the 7th April 1914

CAPTAIN H HALLILAH, I M S, Civil Surgeon, Lyallpur, has been declared to have passed, with credit, the prescribed test in the compulsory colloquial examination in the Punjabi language for medical officers posted to the Punjab for civil employ as Civil Surgeons, held at Lahore, on the 20th April 1914

CAPTAIN S W JONES, I M S, Acting Superintendent, Yeravda Central Prison was granted privilege leave from 31st March 1914 to 22nd April 1914, both days inclusive

MR H E LUCAS, Acting Jailor, Yeravda Central Prison, was in charge of the office of Superintendent, Yeravda Central Prison, in addition to his own duties, during the absence of Captain Jones

WITH effect from the 18th April 1914, consequent on the departure on leave of Lieutenant Colonel J Morwood, I M S, Lieutenant Colonel W Young, I M S, Lieutenant Colonel W H E Woodlight, I M S, Civil Surgeons, 2nd class, to officiate as Civil Surgeons, 1st class

MAJOR T H GLOSTRER I M S, Assistant to the Director, Bombay Bacteriological Laboratory, is granted from the date of relief such privilege leave of absence as may be due to him on that date in combination with furlough for such period as may bring the combined period of absence up to one year

LIEUTENANT COLONEL D T LANE, I M S, Civil Surgeon, Ambala, was granted six weeks' privilege leave from 1st June

MAJOR J G G SWAN, I M S, Civil Surgeon, was appointed to act as Civil Surgeon, Lahore, vice Lieutenant Colonel D M Davidson, I M S, granted leave

MAJOR J H McDONALD M B, C M (Edin), I M S, has been allowed by His Majesty's Secretary of State for India, an extension of furlough on medical certificate for five months

MAJOR E C HEPPFR, I M S, Civil Surgeon, was on study leave from the 7th January to the 8th April 1914

CAPTAIN H ROSS, I M S, Civil Surgeon, was on study leave from the 7th February to the 25th April 1914

LIEUTENANT COLONEL L G FISCHER, I M S, Civil Surgeon, Dehra Dun, privilege leave for one month, with effect from the 19th June 1914 or the date of relief, and Capt A W M Harvey, I M S, of 9th Gui khas acted for him

CAPTAIN H A LAFOND, I M D, Officiating Surgeon to His Excellency the Governor of Bombay and in sub medical charge of His Excellency's establishment, has been granted one month and fourteen days' privilege leave combined with furlough for one year, with effect from the forenoon of the 9th April 1914

THE leave on private affairs granted in combination with privilege leave to the Hon'ble Surgeon General Sir C P Lukis, K C S I, M D, F R C S, R H S, Director General, Indian Medical Service, in the Home Department notification No 1367 C, dated the 26th February 1913, has been extended by three days, viz., from the 13th to 15th November 1913, inclusive,

THE services of Captain N N G C MOVEAN, M B, I M S, are placed temporarily at the disposal of the Government of Bombay

THE services of Captain O H CROSS, I M S, are placed temporarily at the disposal of the Government of Madras

THE services of Captain S C CHUCKERBUTTY, I M S, are placed temporarily at the disposal of the Chief Commissioner of Assam

THE services of Major M CORRY, M D, I M S, are placed temporarily at the disposal of the Chief Commissioner of Delhi

CAPTAIN C NEWCOME, M B, I M S, is appointed to be a probationer in the Chemical Examiner's Department and is attached to the Chemical Examiner's Laboratory at Calcutta

SIR ASST SURGN AND HON CAPT DANIEL O'CONNELL MURPHY is permitted to retire from the service, subject to His Majesty's approval, with effect from the 5th June 1914

CAPTAIN J D SANDS, I M S, Officiating Resident Surgeon, Medical College Hospital, Calcutta, is appointed to officiate as a Civil Surgeon of the 2nd class, and is posted to Murshidabad until further orders

CAPTAIN W L HAPNETT, I M S, is appointed to officiate as Resident Surgeon, Medical Hospital, Calcutta, with effect from the date on which he assumes charge of his appointment

The following promotions are made, subject to His Majesty's approval -

To be Colonels

Lieutenant Colonel Hormisje Edulji Banatvala, vice Colonel R N Campbell, C B, C I F, V B, retired Dated the 2nd April 1914

Lieutenant Colonel Percy Charles Hutchison Strickland, vice Colonel R B Roe, retired, with effect from the 15th May 1914

Colonel Strickland's tenure of appointment will reckon from the 13th January 1914

Colonel Strickland entered the Madras Medical Service in October 1887, none not one of his batch in Bombay or Bengal (except Lt Col Jones in Bombay), have even reached the selected list

MAJOR F P MACKIF, M B, F R C S, I M S, Officer on Special duty for the investigation of Kala Azar, is granted privilege leave for 3 months, with effect from the 27th June 1914, or subsequent date

LIFUTENANT COLONEL J J PRATT, F R C S, I M S, for many years a well known Surgeon in the United Provinces, has been appointed Surgeon to the Seamen's Hospital at the Albert Docks, to which the London School of Tropical Medicine is attached

MAJOR J GOOD, M B, I M S, Civil Surgeon, Myaungmya, is appointed to be Civil Surgeon, Moulmein, in place of Lieutenant Colonel J Entican, M D, I M S, proceeding on leave

MR R A HOLLINGSWORTH, L R C P & S (Edin), Civil Surgeon, Insein and Hanthawaddy Districts, excluding the Syriem Municipality, is appointed to be Civil Surgeon, Myaungmya, in place of Major J Good, M B, I M S, transferred

SIR MLY ASST SURGN AND HON CAPT T W MINTY, on relief by Maung Tha-Noo at Sandoway, is appointed to be Civil Surgeon, Insein and Hanthawaddy Districts excluding the Syriem Municipality, in place of Mr R A Hollingsworth, transferred

CAPTAIN W F BRAYNE, I M S, Officiating Deputy Sanitary Commissioner, Burma, if appointed, be Civil Surgeon, Taunggyi, in place of Captain H S Matson, I M S, proceeding on leave

UNDER the provisions of articles 260, 308 (b) and 233 of the Civil Service Regulations, privilege leave for three months combined with furlough for one year and nine months is granted to Lieutenant-Colonel J Entican, I M S,

Civil Surgeon, Moulmein, with effect from the date on which he may avail himself of the privilege leave

CAPTAIN A H PROCTOR, I M S, Officiating Civil Surgeon, Seiampore, is, on return from leave, appointed to act as Civil Surgeon, 24 Perianas, and Medical Inspector of Emigrants (Colonial Emigration) during the absence, on deputation, of Major H B Steen, I M S, or until further orders

MAJOR J W F RAIT, I M S, Civil Surgeon, Hooghly, is appointed to hold civil medical charge of Seiampore, in addition to his own duties, during the absence, on deputation, of Captain A H Proctor, I M S, or until further orders

MAJOR E E WATERS I M S, Civil Surgeon, Howrah, is appointed to act as a Civil Surgeon of the first class, with effect from the 22nd May 1914, during the absence, on leave, of Lieutenant Colonel H S Wood, I M S, or until further orders

MAJOR J W F RAIT, I M S, Civil Surgeon, Hooghly, acted as a Civil Surgeon of the first class from the 15th to the 21st May 1914, during the absence, on leave, of Lieutenant Colonel H S Wood, I M S

UNDERR the provisions of article 168 of the Civil Service Regulations, Major A Fenton, M B, I M S, was appointed to officiate as Medical Superintendent of the General Hospital, Rangoon, in addition to his own duties, during the absence of Lieutenant Colonel C C S Barry, I M S, on privilege leave. This department notification No 84, dated the 6th April 1914, is hereby cancelled

UNDEP the provisions of article 168 of the Civil Service Regulations, Captain H B Scott, I M S, was appointed to officiate as Police Surgeon and Pathologist, Rangoon General Hospital, in addition to his own duties during the absence of Captain A Whitmore, I M S, on privilege leave. This department notification No 83, dated the 6th April 1914, is hereby cancelled

CAPTAIN S T CRUMP, I M S, has been granted by His Majesty's Secretary of State for India, an extension of ten days' extraordinary leave without pay

Mrs W A REARDON, L R C P & S (Edin), who was appointed to be a Civil Assistant Surgeon, on probation, in this department notification No 224, dated the 16th July 1913, is confirmed in that appointment with effect from the 10th July 1913

MR J M DASS, M B, Ch B (Edin), is appointed as a temporary Civil Assistant Surgeon in Burma, with effect from the date on which he assumed charge of his duties

UNDER the provisions of articles 260, 316 and 233 of the Civil Service Regulations, privilege leave for three months, combined with special leave on urgent private affairs for three months, is granted to Captain H S Watson, I M S, Civil Surgeon, Taunggyi, with effect from the date on which he may avail himself of the privilege leave

CAPTAIN S C CHUCKERBUTTY, I M S, whose services have been placed temporarily at the disposal of the Chief Commissioner, Assam, is appointed to officiate as Civil Surgeon, Kamrup, with effect from the 1st June 1914

UNDER Section 6 of the Prisons Act, 1891, the Chief Commissioner is pleased to appoint Captain W J Powell, M B, Ch B, D P H, I M S, Officiating Superintendent, Central Jail, Jubbulpore, to the executive and medical charge of the Jubbulpore Central Jail

THE following are the prizes and the winners at the examination of the last batch of probationers at the R A M College —

The Highest Prize (highest total) Lieutenant A Watson, R A M C, 569 out of 700 *Pior acc*, Lieutenant N V Lothian, R A M C, 534 out of 700

Hygiene Parkes' Memorial—Lieutenant N V Lothian, R A M C, 168 out of 200, 2nd, De Chaumont, Lieutenant A Watson, R A M C, 158 out of 200 *Pior acc*, Lieutenant D W Rintoul R A M C, 154 out of 200

Pathology 1st Fayrer Medal—Lieutenant B F Beatson, I M S, 173 out of 200 *Pior acc*, Lieutenant K V R Rao, I M S, 171 out of 200 2nd, Tulloch Memorial Medal—Lieutenant A Wilson, R A M C, 167 out of 200 *Pior acc*, Lieutenant P D Warburton R A M C, 159 out of 200

Surgery 1st Montefiore—Lieutenant R V Rao, I M S, 84 out of 100 2nd Montefiore—Lieutenant A Wilson, R A M C, 82 out of 100.

Tropical Medicine—Ronald Martin Gold Medal Lieutenant J G O Moses, I M S, 80 out of 100 *Pior acc*, Lieutenant A Watson, R A M C, 74 out of 100
Administration Marshall Webb Medal—Lieutenant N V Lothian, R A M C, 93 out of 100 *Pior acc*, Lieutenant A Watson, R A M C, 87 out of 100

LIEUTENANT COLONEL A COLEMAN, I M S, was granted 4 months' furlough (308 b C S R), from 24th June

ON transfer to the Punjab, Major J Woods, I M S, was posted to Gujranwala as Plague Medical Officer

DURING the absence on privilege leave of Lieutenant Colonel Henry Smith, V H S, I M S, the Senior Assistant Surgeon is posted to act as Civil Surgeon of Amritsar

MAJOR H M H MELHUISH, I M S, acts as Deputy Sanitary Commissioner, Punjab

MAJOR G E STEWART, M B, F R C S E, I M S, is granted privilege leave of absence for three months, with effect from the date of receipt

MAJOR W J COLLINSON, I M S, supervising medical officer, travelling dispensaries, Meerut circle, to hold charge of the duties of supervising medical officer, travelling dispensaries, Aligarh circle, in addition to his own, vice Captain R S Townsend, I M S

CIVIL ASSISTANT SURGEON HARI RAM VARMA, in charge of the district hospital Mutta, to hold civil medical charge of that district, in addition to his own duties, vice Captain R S Townsend, I M S

THE Civil Surgeon of Aligarh to hold visiting charge of the Mutta district, vice Captain R S Townsend, I M S

Notice

SCIENTIFIC Articles and Notes of interest to the Profession in India are solicited. Contributors of Original Articles will receive 25 Reprints gratis, if requested

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Kerley Practice of Pediatrics, W R Saunders Co
J B Murphy's Clinics, Vol III, No 1
Report of Second Burma Medical Congress, 1913
Dr Naik's Diabetes, Higginbothams Madras
Lt Col Elliot's Sclera corneal Trephining, 2nd Ed G Pulman & Sons
L Mummery's Disease of Rectum & Anus, 1s 6d Ballière, Tindall & Cox
Report of Punjab Asylum for 1913
Report of Chemical Examiner, Punjab
W Tibbles Dietetics Ballière, Tindall & Co Demy 8vo Price 12s 6d
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- Major Overbeck Wright, I M S, Agra, Lt Col Jay Gould, I M S, Simla, Capt S Houghton, I M S, Malakand, Major Baird, I M S, Major P Connor, I M S, Chupra, Sir L Rogers, I M S, Calcutta, Major C A Gill, I M S, Lahore, Capt H B Scott, I M S, Rangoon, Major E A C Mathews, I M S, Jorai, Lt Col C R Stevens, I M S, Calcutta, Major H A Williams, I M S, Rangoon, Lt Col J B Smith, I M S, Poona

Original Articles.

REMARKS ON WATER SUPPLIES OF TROOPS IN INDIA.

B. P. HEMIR,

CORONEL, I.M.S

THE most paramount sanitary requirement of troops in the tropics is the supply of a sufficient quantity of wholesome water conveyed to barracks and cantonments in pipes. Our Indian experience is that wherever such a supply has been provided there has been an enormous reduction in the incidence of cholera, enteric fever, and bacillary dysentery. The average annual mortality from cholera in Bombay, Calcutta and Madras is now twenty-five times less than it was before wholesome piped water-supplies were introduced into those cities. We can never ignore the fact that some of the most prevalent and deadly diseases of India are water-borne, and that practically all extensive and explosive epidemics of these diseases arise either directly or indirectly from specifically polluted water. If we in our cantonments neglected our water-supplies or depended on the methods of supply we adopted 25—50 years ago we would once more get the appalling epidemics of water-borne disease that used to occur at that period. When the source of supply is not absolutely reliable there is always risk, there is the further danger that contamination may occur at any stage of distribution until the water reaches the consumer. It ought, therefore to be a recognised principle of military sanitation in the tropics that wherever a permanent piped supply of good water is available it should be provided for cantonments. No reasonable amount of labour and expense should be spared to get this water from a reliable source. It is only by so doing that the many possible channels of water-borne infectious diseases can be prevented from reaching troops—locked up in pipes the water cannot readily be contaminated.

One of the defects of our piped water-supplies to troops in India is the fewness of the stand-pipes laid in the regimental lines, and these are frequently at a distance from the individual barracks. Under this circumstance the water has to be conveyed from these stand-pipes and stored in cisterns in verandahs or somewhere adjacent to the barrack. Where there is a piped water-supply in cantonments it is desirable to have water laid on to each barrack, not necessarily inside barrack rooms—water-taps in barrack rooms are not an unmixed sanitary blessing. However, if cisterns are properly constructed, located, provided with a locked cover and tap, and all unnecessary handling of water is prevent-

ed, there should be little risk of any serious contamination arising. At the present time in India we endeavour to prevent the pollution of water consumed by troops in cantonments as follows—Each unit details one of its sanitary detachment men per two companies to look after the purification, distribution, and storage of water, all working under the supervision of a non-commissioned officer. If the water has to be boiled the same men supervise this, the subsequent cooling, and distribution of the water to the barracks. While so employed they do no other sanitary duty, they alone are responsible for the maintenance of the purity of the water from its source to the consumer. All actual handling that has to be done should be carried out by these men, and not by the professional water-carrier (*bharsi*), the latter being used to carry the water when this is necessary, but not allowed to handle taps or put their hands into the water on any account. One would here remark that the *masakh* (goat-skin water-bag) used by *bharsis* should be forbidden for the distribution of water of Indian troops in both peace time and on service. The water should be distributed to the cisterns or water containers at a definite hour once or twice a day. The non-commissioned officer and men should be changed periodically. The great advantage of this system is that practically the same method of sterilisation, distribution, and storage are required on field service in the tropics and there are always a number of trained responsible men available to carry it out.

Water-supplies from wells, specially superficial wells, are always a source of anxiety to sanitary officers, and must be perpetually watched. Where such a supply has to be depended on the wells known to contain wholesome drinking water should be covered and otherwise carefully guarded and provided with pumps. No bathing, washing of clothes, nor watering of animals, should ever be permitted in the vicinity of drinking and cooking water wells. Other wells containing less wholesome water should be allotted for bathing, and watering of animals and roads. Wells to be used by dhobies should be covered, provided with a pump, and connected with properly constructed washing ghats. Condemned wells should be filled up or permanently covered, when they are at all accessible, notices should be posted on them to the effect that it is dangerous to drink the water.

In tropical warfare there are many ways in which a water-supply may be specifically polluted, hence the need of great attention to every detail connected with this supply. If troops are not trained in water duties in peace time they will in the tropics most certainly suffer from water-borne diseases on service. "This care and system which are very properly grouped under the term 'water-discipline' constitute one

of the most important means of keeping the ranks full in war, and there should be no more difficulty in enforcing it than in enforcing discipline in the purely military sense" *Colonel C H Melville, R A M C,—Military Hygiene and Sanitation*, page 167

In stations where the water-supply is from wells it is usually boiled and stored in some form of water container in the barracks. These in British troops' barracks are, as a rule, cylindrical or cubical-shaped cisterns provided with locked covers and taps. With Indian troops, however, they are often old beer casks, with or without covers and with or without taps, in some regiments, and especially in detachments, the containers are open *baltis* or kerosene oil tins, there is much unnecessary handling of the water and the possibility of direct access (and therefore contamination) to it. The water containers for the barracks of Indian troops deserve more attention than they receive. There are many ways in which water may be contaminated between the time it is boiled and locked up in cisterns. We have, in fact, a condition almost identical with that experienced on most manœuvres, and always on field service in India, and it serves the purpose of teaching men how drinking water should be sterilised, distributed, and stored, and the importance of preventing wastage. I believe most military sanitarians who have worked in the tropics will agree that it is a sound rule to consider all water from open sources contaminated, and that both in cantonments and on field service, all such water should be sterilised by heat or otherwise before being drunk by troops. Near military cantonments in India all open waters are undoubtedly contaminated. It may be argued that water from such sources in uninhabited areas may be quite wholesome and on field service needs no purification. This is not the case however. Once the theatre of operations is entered the area necessarily becomes inhabited by the troops, the accessory non-combatant establishments of an army, and others. All open sources of water for troops in the tropics, in cantonments, on manœuvres and on service, must be purified in some way before use (*Colonel C H Melville, R A M C,—Military Hygiene and Sanitation*, page 158)

There is a rapidly growing opinion amongst military sanitarians that some form of sterilising water cart or portable steriliser is necessary for field service in the tropics. Personally I have no doubt as to the superiority of this method of purification of water on manœuvres and on service over all others known to us at present, and I consider that it is highly probable that in the future some form of water steriliser on the principle of heat exchange will be in use by armies in the tropics on service—as carts where there are roads, or as smaller and portable steri-

lisers where pack transport only is practicable. It is also considered preferable, where divisions are grouped together, that the sterilisation should be carried out at central stations, each station to include, say, the troops and followers of a whole brigade, rather than that this be carried out by the units themselves. The bacilli of enteric and para-typhoid fever, epidemic dysentery, epidemic diarrhoea, and cholera (the chief water-borne diseases on field service), are killed by a few seconds' exposure to a temperature of 80 Centigrade. In the Griffiths' steriliser, which operates on the principle of heat exchange, and is now used by our Home Army on manœuvres, the water is so heated. The largest stationary type of this cart can deliver 100 gallons of water per hour. A smaller portable pattern is also in use. None of the porcelain, infusorial earth, or compressed clay and sand bacterial filters, have so far stood the test of a large campaign.

All medical officers of units should emphasize to commanding officers the paramount importance of close attention to all details connected with the distribution of water both in barracks and on field service. Units that have been thoroughly trained in these water duties in cantonments without a piped water-supply, have on field service a great advantage over those who have had a piped water-supply laid on at, or in, the barracks. The closer the method of purification and distribution of water adopted in peace assimilate those required in war, the less the risk to the troops of water-borne diseases on service.

During cholera epidemics one has on two occasions isolated the Koch's comma bacillus from shallow wells into which a direct trickle was traced from the cesspits of houses harbouring cholera cases, and on one occasion from a deep well into which a cholera case accidentally discharged his excreta. In this latter instance an explosive epidemic affecting 37 persons occurred amongst the people using the well water. As severe epidemics of cholera arise from specific pollution of the water-supply, and as the cholera vibrio has a limited life in water, the continuance of epidemic cholera practically always means that there is continued specific pollution of the water. Given a piped water-supply secure from specific contamination, epidemic cholera should be one of the easiest of the water-borne infective diseases to control amongst troops and in cantonments generally, with a water-supply from wells, tanks, ponds, and exposed sources generally the case is very different.

Before concluding these remarks on water-borne cholera, I would like to say a word about the use of permanganate of potassium in wells during cholera epidemics, when wells are the source of the water-supply. I do so, because it has been stated by recognised authorities that it is useless. I have adopted it in several large and small

epidemics with success. One has never been able to recover the cholera vibrio after the permanganate has acted on the water for six hours. The permanganate to be successful must be carried out so that it is dissolved in the water uniformly. In the year 1910, at the hill station of Lansdowne, we were surrounded by 35 villages, all within a few miles of the cantonment and along the trade routes and paths, yet by a rigid system of inspection and isolation of contacts, we kept the disease out of the troops. One has several times marched with troops through cholera infected areas, in which the civil population was being decimated, while the troops escaped completely, this exemption was not obtained by our old *laissez faire* method, it meant uninterrupted watchfulness on the part of the medical officer, and every combatant officer in regard to the water-supply, food, habits of the men, excluding them from infected areas, and the camps from imported infection, and a score of other preventive measures. With strict discipline in connection with preventive measures, I believe that troops can be kept free from cholera, but this immunity can only be vouchsafed if a thoroughly sound system of preventive measures have been drawn up and rigidly enforced. The carrying out of these measures throws very severe work on the medical officer.

In peace time the greatest general safeguards against epidemic cholera are a sound state of sanitation in cantonments, including a good piped water-supply, good drainage, an efficient conservancy system, especially incineration, good kitchen arrangements, and the destruction of all breeding places of flies. During outbreaks of cholera, the one cardinal rule to adopt is to boil all drinking water, the same rule applies to milk from whatever source. One might here remark incidentally that whilst the milk-supply of our European troops is good and well looked after, that of our Indian troops is, on the whole, bad, and very imperfectly supervised. So long as the milk-supply of Indian units is entirely in the hands of village gowallahs and double company or squadron *banniahs*, it will be a source of risk to health. The utensils into which the milk is drawn are not clean, the milker is unclean, the teats of the cows or buffaloes are dirty, and the milk is in most cases diluted with water of questionable purity. One has for years advocated that the milk of all Indian troops be boiled before use.

On service in the tropics we have perpetually to be on the *qui vive* in regard to cholera. When we consider the rapidity of spread of explosive epidemics of this disease, and the fact that it may decimate a force in a few weeks, its appalling nature is brought home to us. Epidemic cholera under the circumstances may even compel the commander to relinquish a

campaign. It follows then that the utmost vigilance of all medical and sanitary officers in connection with water-supplies is absolutely essential from the beginning to the end of a campaign in the tropics.

In former years Eberth's bacillus was frequently reported as being found in public water-supplies, and it probably was the cause of explosive epidemics in some instances, but at the present day we require more bacteriological evidence in regard to the differentiation of this bacillus than satisfied bacteriologists of 20—25 years ago. Personally one knows of no single instance in India in recent years where typical and unequivocal *Bac. typhosus* has been found in a public water-supply. The same remark applies to the different strains of *Bac. dysenteriae*. It is probable that specifically contaminated water does give rise to an odd case or two, and possibly on rare occasions to outbreaks of both enteric and paratyphoid fever, but the records of recent years show that as far as our troops in India are concerned, it is not now responsible for these diseases. Bacillary dysentery (and possibly amœbic also) may be brought about in an epidemic form by specifically contaminated water-supplies. This was possibly the origin of the severe epidemics of that disease that occurred amongst our troops 50 years or so ago. One is disposed to consider it a sound rule to assume that any explosive epidemic outbreak of bowel complaints in cantonments, on manœuvres, and on service, may be due to infection of the general water-supply, to which, under the circumstance, the attention of sanitary officers and regimental medical officers should be directed. Exemption from water-borne disease does not, and in the tropics never can, justify any neglect in regard to the wholesomeness of the water consumed by troops. It is particularly necessary for us to keep this in mind on field service in the tropics, where there is always the possibility of our water-supply being specifically polluted. A few years ago, on manœuvres, while searching for a suitable water-supply for a brigade in company with the local civilian authority, an educated Indian, he pointed out an irrigation channel as a good supply, remarking at the same time that it was convenient for Indian troops who could carry out their ablutions in it after performing the offices of nature. There were two villages above the part of the channel he referred to, both within a mile of the camp site, in one of them cholera was prevalent. As all the inhabitants of the villages probably thought as this official did, the risks of using such a supply can easily be imagined. By our Regulations, the source of water on service is selected by the staff in conjunction with the divisional sanitary officer or other medical officer present, and as far as practicable prevented from contamination. The best

water available is chosen, it may be of very indifferent quality, but we have to make it as wholesome for the troops as possible. If it is from the pipes of a public water-supply, it will probably be wholesome and needs no purification. Such a supply is very rarely available in warfare in the tropics, if from any other source, it must be looked upon as unfit for use until subjected to some preliminary purification and until so purified no person with the force should be allowed access to it. It is only the water parties of units that should be allowed access to the source of the water even they should only be allowed there at definite fixed hours and in a systematic way. The smallest possible number only should be allowed to go near the water to draw it. If a sterilising water cart is in use, such as the new pattern Griffith, only one man is required to put the end of the hose pipe in the water, if it is to be drawn in buckets a double line of men should be formed, one line passing on the filled buckets and the other returning the empty ones. No animals should be allowed near the source.

THE TREATMENT OF MALIGNANT NEW GROWTHS BY DR DE KEATING HART'S METHOD OF FULGURATION AND THERMO RADIO-THERAPY

BY E. A. C. MATTHEWS, M.B., etc (Cantab), V.H.S.,
MAJOR, I.M.S.,

10th L.C.C.O. Lancers

It was my good fortune when studying in Paris last year to meet Dr de Keating-Hart the originator of two new methods of treating cancer, called by him Fulguration and Thermoradio-therapy. By his great courtesy I was permitted to become fully acquainted with these methods and to employ them myself on cases at the Clinique St Luc, 41 rue des Marguetttes, and as his results are far in advance of any other treatment of cancer yet known, a short account of them may be of interest.

I — FULGURATION

As used by de Keating-Hart, this produces an effect differing absolutely from the effects of ordinary destructive fulguration Doyen's electro-coagulation or the diathermy fulguration electrode. All are produced by high frequency currents, but the former requires a unipolar high tension current and a long spark, while the others are produced by low tension currents, generally bi-polar, and with the spark eliminated or very short, the latter, also, mostly produce more or less destruction of tissue, while the essential point in the application of the former is that there shall be no searing of the tissues at all.

In an article on the Pathogenesis of Cancer in the *Practitioner* for October 1913, noticed in a recent issue of the *I.M.G.*, Dr de Keating-Hart gives up the parasitic theory and concludes that cancer "is produced by cells over-cultivated for a long time in irritated zones of the organism which, after a variable period acquire, as a result of slow and prolonged increase of heat and food the hereditary characters of overproduction and overfeeding which distinguish them" and the effect of fulguration is to alter by the shock of the spark, the trophic nerve supply of the tissues in which the cancer was lying, thus preventing any further cellular overgrowth. This theory seems to be supported by the fact that the healing of the wound after fulguration is always greatly delayed and that experimentally in mice if a cancer about to be grafted is first fulgurated no effect is produced on its subsequent growth, but if the wound prepared for the reception of the graft is fulgurated the cancer will not grow.

Technique

As it requires experienced electro-therapeuts with a practical knowledge of the method to carry out the treatment, it is unnecessary to go into great detail, but the following will give a general idea of it.

The special apparatus required consists of—

(1) a high tension high frequency apparatus with an Oudin's resonator capable of giving at least a 10 or 12 cm spark,

(2) Dr de Keating-Hart's special electrode

(3) an electric air pump or bellows

(4) a metal operating table

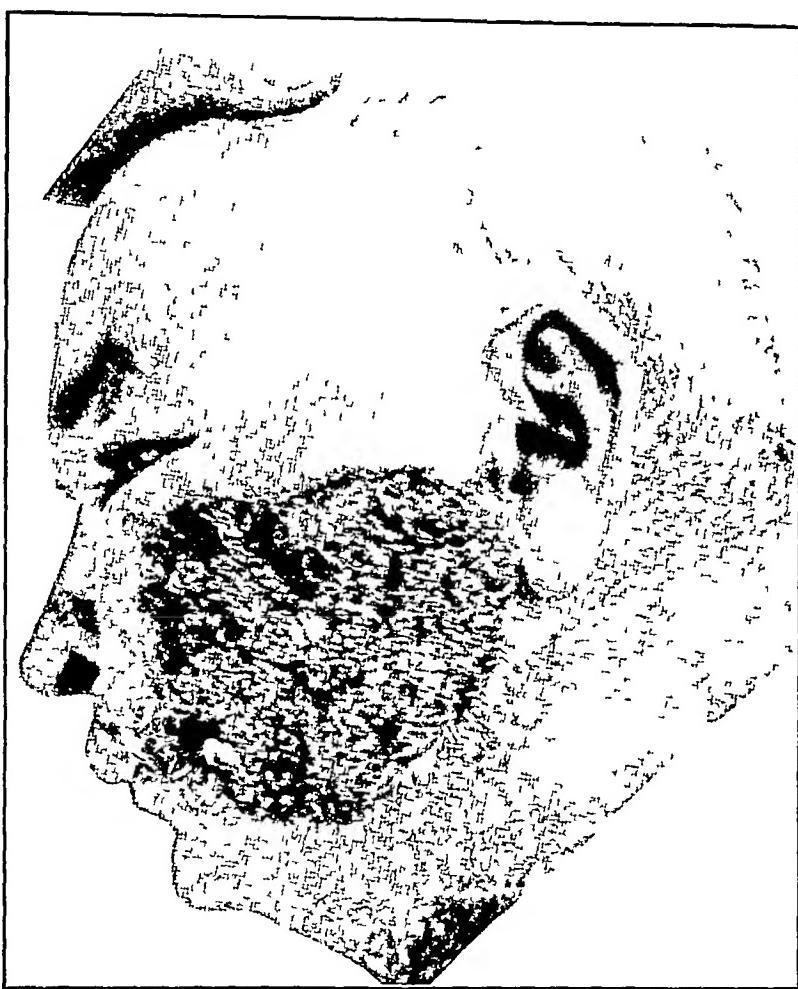
The electrode is a metal sound enclosed in a sheath of non-conducting material and so arranged that the point can be withdrawn into the sheath about 15 cm and the delivery tube from the air bellows also enters the sheath at about this distance from its end. The sound is generally withdrawn to give a spark of about 12 cm and the sheath is necessary to direct the spark only on the parts to be fulgurated, and is particularly necessary for deep hollows in the wound. It should be perfectly dry, as otherwise the character of the spark is altered, and this is maintained by the current of air from the bellows which also helps to keep the instrument cool and to prevent the accidental blocking of the sheath by coagula.

The metal table serves to earth the currents by having a portion of the patient's skin lying bare on the table.

The surgeon proceeds to operate under the ordinary rules of surgery governing these cases, and when everything is ready for the wound to be sewn up, fulguration is done, the tissues must be kept as dry as possible and the electrode moved rather quickly over them until they appear somewhat of a straw colour bones and vessels requiring rather

THE TREATMENT OF MALIGNANT NEW GROWTHS BY
DR DE KEATING-HART'S METHOD OF FULGURATION
AND THERMO-RADIO-THERAPY

BY MAJOR E A C MATTHEWS, M.B., etc (Cantab), V.H.S., I.M.S.,
10th D.C.O. Lancers



CASE II



CASE I



CASE V

less than muscles and tendons, the time taken varies from about 5 to 20 minutes according to the size of the wound. This is then closed in the ordinary way except that very free drainage has to be allowed for, owing to an excessive discharge of serum after fulguration.

Results.—Below will be found some statistics of 247 cases, and a still more convincing record of six typical cases described more fully.

The ideal cases for this form of treatment are early operable cases in which free removal can be done first, and in operable mammary cancers which give perhaps 30 per cent of cures, with ordinary surgery Dr de Keating-Hart by his method obtains 80 per cent of cures.

In addition he has a record of many cases apparently cured in which for various reasons the complete operation could not be attempted, but in which removal was done close to the macroscopic limits of the tumours.

Case IV.—Sarcoma of inguinal region. Wide excision and two operations for recurrence. In the course of the last vagina found invaded and removal considered impossible. Case then treated with X-rays, which healed the superficial ulceration, but the deep tumour continued to grow. Three limited operations with fulguration have cured since 4½ years, two metastases similarly treated remaining cured for 4 and 3 years.

A remarkable case after repeated failures by surgery and X-rays, of success by fulguration and limited excision.

Case V.—Illustrations III ocular epithelioma, extensive operation with removal of eye, rapid recurrence. Then curetting and fulguration. Remained well for a year but then frontal ethmoid bones and superior maxilla developed metastases. Operation confined to macroscopic lesions but with opening of the cranium, combined with fulguration has cured for over 3 years.

Total cases	Palliative treatment with insufficient excision				CURATIVE TREATMENT						PERCENTAGE CURED		
					By excision limited to the actual lesion			By free excision			Died during operation or shortly after	Curative	
	Cured	Failed	Disappeared	Total	Cured	Failed	Disappeared	Total	Cured	Limited excision	Free excision		
247	59	19	5	83	53	28	7	118	13	Nil	33 13%	72%	66% 100%

Of the 13 cases cured with free excision, 6 were mammary, 1 carcinoïd, 5 buccal or pharyngeal and 1 rectal. The number is too small, of course for percentages to be reliable, but they are certainly remarkable results.

The following cases were all confirmed by independent pathologists, and the surgical treatment performed by independent surgeons.

Case I.—Illustrations I massive epithelioma of neck, recurring immediately after operation by Prof. Morestin. The recurring tumour was deeply fixed, surrounding the left carotids and jugulars, limited excision and fulguration. Remaining cured over four years, in spite of the rapid recurrence and of the limited removal.

Case II.—Illustrations II enormous epithelioma originating in buccal mucous membrane, twice operated on by Dr Braquehaye, followed by rapid recurrence, the second time deeply invading the cheek lips, and maxillæ. The surgeon refused to operate again. Excision limited to the tumour with curetting of bones and fulguration. Remaining cured over 4½ years.

Case III.—Cancer of breast operation. Recurrence some months later in the shape of a large sub-clavicular tumour, excised, and fulgurated. Remaining cured over 4½ years.

Case VI.—Osteo-sarcoma of shoulder. Removal of tumour and of three rapid recurrences. Then treated with X-rays without effect. Then removal of tumour and humerus down to lower epiphysis combined with fulguration. Some weeks later a cutaneous nodule also removed, and the part fulgurated. Cured over 5 years after repeated failures of surgery and of radio-therapy.

II THERMO-RADIO-MILRAY

This means treatment by warmth combined with X-rays.

Great differences are found in the sensitiveness of various tissues to the effect of X-rays, and Beigomié and Tibondean in 1907 enunciated three laws governing this effect, viz.—

That X-rays act with the greatest intensity on those cellular elements

- 1 whose reproductive activity is greatest.
- 2 whose Karyokinesis is most intense,
- 3 whose morphology and functions are the least fixed

These laws then explain—

1 The elective destruction of certain neoplasms obtained by X-rays in the midst of healthy tissues.

2 The great radio-sensitiveness of certain rapidly growing tumours.

So far, then, the selective effect of X-rays on malignant growths has been shown, and the difficulty has been to give adequate doses to the tumours without doing excessive damage to the healthy skin above, but the following experiments have shown the way out.

If a portion of skin traversed by high frequency currents, that is, with its temperature raised, is irradiated up to 5H, the ordinary epilation dose, an acute dermatitis will result without fail exactly conforming to the shape of the electrode, but nothing to do with the current, for the same result can be obtained by fomenting the skin, dermatitis being limited to the position of the fomentation. Conversely, if the portion of skin under the electrode is kept very cold with ice, no reaction at all is produced with a very much larger dose of X-rays.

It follows, then, that other things being equal, the radio-sensitiveness of living tissues depends directly on their temperature, so that by keeping the irradiated skin ice-cold and warming the tumour below, the most energetic effects of X-rays can be produced in the latter with doses which would otherwise be impossible on account of the inevitable production of dermatitis. From these facts Dr de Keating-Hart has evolved his marvellously effective treatment of inoperable new growth.

Three effects are required, working together—

1. Heating the new growth
2. Cooling the skin through which the irradiation is made
3. Giving an effectual dose of X-rays

Technique

1. The heating of the new growth is now quite simple since the advent of diathermy which enables deep parts in any situation to be heated.

2. For cooling the skin the best method is to apply crushed ice in a thin rubber bag.

3. Irradiation is done with a very carefully educated haird Chaband tube (about 10 Benoist) placed about $1\frac{1}{2}$ inches from the skin, the dose is measured by Boidier's chromometer, the pastille lying on the electrode and allowed to colour to half way between I and II on the Boidier scale.

The diathermy electrodes of specially pliable aluminium foil are first arranged, the indifferent one being placed in firm contact with the skin opposite the place for the active one, in such a way that the whole of the tumour shall be traversed by the heat. The active electrode is then applied through a hole in protective material to limit the exact portion of skin to be irradiated, on this is placed the pastille, then an ice bag with about 1 centimetre thickness of ice and firm pressure applied over all. The diathermy is then turned on to the limit of the patient's endurance, generally between 1 and 2

ampères, then the X-ray tube is arranged over the hole and started, being kept running until the pastille is the right colour, when the séance is finished. The same piece of skin should not be irradiated again for 12 days, but, by arranging to treat the tumour from different directions, fresh portions of skin can be utilised and séances can be given every other day, the only indication for caution being in cases where auto-intoxication occurs due to absorption products, particularly when rapid resolution takes place, and in cachetic cases.

RESULTS—This form of treatment is undertaken in all forms of new growth which are obviously inoperable, or in those cases who refuse operation, in the former class a partial operation removing as much of the growth as possible with fulguration is frequently done to lessen the period of treatment, and to reduce the chance of auto-intoxication from the cytolysis of such a large mass of cancer cells. In the latter class if seen early the results are extremely good, but in the former too there is a record of a large number of apparent cures, statistics have not yet been published as the period since recovery is not long enough to warrant definite conclusions, but during the six weeks I attended the clinique I saw many apparent recoveries, and in every case there was some obvious improvement. When one realises that all these patients are without hope of relief except from the morphia syringe given up by the surgeon, and condemned to horrible suffering preceding a speedy death, the results of this treatment deserve world-wide attention, especially as the limitations of X-ray treatment and of radium-therapy in the severer forms of cancer are becoming more and more defined.

Finally, the following case may be mentioned as a good example of the effects of this treatment. I saw the patient in excellent health last year, and he has been cured sufficiently long to be worth quoting. Lymphosarcoma with large deposits in neck, axilla and groin, first treated with X-rays with only temporary improvement, next operated on by Prof Delbet, who shortly afterwards and with good reason foretold a rapidly fatal termination, then treated with thermo-radio-therapy by Dr de Keating-Hart, with the result that the tumours speedily resolved, and he has remained in good health for $2\frac{1}{2}$ years.

SOME OBSERVATIONS ON ANÆMIA OCCURRING AMONG INDIAN TROOPS STATIONED IN SINGAPORE—1912 1913

BY V N WHITAMORE,
CAPTAIN, I.M.S.

THE following observations on anaemia are based on one and-a-half year's medical charge of the 3rd Brahmins stationed in Singapore from

July 12th, 1912, till April 8th, 1914, and though no definite cause has been ascertained, the condition in varying degrees of severity has been so widespread, and the general course of symptoms so similar, that I consider the condition to be of some interest. The disease was characterised by loss of appetite, marked pallor, asthenia, wasting, and in most cases an intermittent temperature of variable duration.

The climate of Singapore may briefly be described as moist and hot—the average mean temperature being 83° F., the heat is tempered by sea breezes, or else by high winds at certain seasons, in consequence of which chills are of somewhat frequent occurrence.

The Alexandra barracks, for Indian troops, are situated five miles due west of the town, and distant roughly half a mile from the sea. They consist of a series of wood structures supported on brick and cement piles, and are roofed with *attap*—a thatching composed of dried palm leaves sewn together,—which formed an effective protection from sun and rain. The soil on which the barracks are constructed is a loose sandstone, the surface of the ground is much scarred by rain channels, and the ground practically always remains damp owing to the frequency of rain. The drainage of the lines was satisfactory, consisting of tufted earth and cement drains, these, however, ended abruptly at the W D boundary which varied from 30—80 yards distant from barracks. The conservancy arrangements were good, and water was supplied from the municipal reservoir in pipes, it was of good quality, but before being used for drinking purposes it was always boiled as a precautionary measure. The men were supplied with free rations, the quality of which was good. Non-meat eaters were allowed extra *attap*—this was replaced by milk (tinned) after July 1913. Fresh vegetables could be obtained locally, and were washed and boiled on account of the extensive use made by Chinese cultivators of night-soil as a manure. Running parallel to barracks and at a varying distance of 40—100 yards, an extensive fresh water swamp occupied the valley between the barracks and the sea and between the barracks and the swamp, a belt of heavy undergrowth and trees exists. The conditions of the swamp varied, but it always held water in which *Anopheles* larvae were present, of which several species were obtained. The belt of undergrowth and the swamp were adjacent to, but outside, W D land, and scattered along the swamp were a few hills occupied by Chinese cultivators.

There was no attempt at clearing the bush, and the swamp was undrained.

Malaria—The prophylactic issue of quinine—grs 10 twice weekly—was administered during 1911, and up till August 1912, after which it

ceased as a routine measure. It was not infrequent however for men to come to hospital for quinine, and then return to lines. In all cases of men reporting sick with fever, blood was examined, but the failure to find parasites was of frequent occurrence. Many of these cases, however, had obtained quinine at hospital before a blood examination was made.

	Malaria cases	Anæmia cases	Deaths, Total.	Deaths ascribed to Anæmia
1911	474	54	10	
1912	195	165	11	3
1913	199	129	8	3
1914	.	.	.	3 to date.

The number of deaths ascribed to anæmia does not represent the mortality in which anæmia was a prominent feature. Some of the deaths returned under another heading were largely due to anæmia before its severity was fully recognised.

After July 1912 cases were not admitted for malaria, if the temperature abated within 24 hours unless parasites were found.

Anæmia—This class of case was brought to my notice by my predecessor on taking over medical charge of the regiment in July 1912. The prevalence and characteristic appearance of this condition was very noticeable. The clinical picture was also very similar in all cases and the men on reporting sick would describe their condition as “Kamsoorie”—a very apt description.

On admission—General appearance, pallor, asthenia, and some emaciation. Skin in the lighter coloured type, lemon hue, in the darker, a pallid brown with a whiteness shewing through the skin pigmentation. There was also present an icteric tinge. The nail beds and lunulae were white with little or no alteration on relief from pressure. Neither rash, nor petechiae, were present. The skin presented a withered appearance, and lacked gloss and elasticity.

Conjunctivæ and mucous membranes—The conjunctivæ in all cases were white, the duration of pallor on retraction of the lower lid varying with the severity of the anæmia. The buccal mucous membrane was a very pale pink, and in the severer cases superficial abrasions were present. Dryness and soreness of the mouth was a frequent symptom.

Alimentary system—The tongue was usually clean, the condition of the teeth was generally good, some presented a condition of pyorrhœa, but the percentage in which oral sepsis was present was small.

The similarity of gastric symptom, in the great majority of cases particularly in the early stages of the disease, was very noticeable. Of these, loss of appetite and vomiting were characteristic. As regards the former, not only was there no desire for food, but if food was taken it resulted in digestive disturbances, pain, discomfort,

and vomiting. The vomiting, in this condition, was not necessarily the sequela of food. It occurred often the first thing in the morning in the form of severe retching, when only bile-stained mucus was brought up, presumably resulting from a catarrhal gastritis, there was no blood in the "ejecta." All forms of food resulted in this condition even milk, in the severer cases, was rejected on admission into hospital, and though this condition improved under treatment, some gastric irritability was always present. Pain and discomfort in the hepatic region was a frequent symptom, but there was no marked local tenderness on pressure, on deep pressure in the epigastrium diffuse tenderness was elicited. This tenderness could not be localised nor was there marked rigidity of recti. Nothing else could be detected in the abdomen by palpation. The stools were usually loose, and averaged 3 or 4 daily, they were usually of a pale-yellow colour, often frothy, and were offensive.

Examination of the faeces microscopically was made in all cases frequently, these examinations were made at various laboratories and *in no slide were the ova of ankylostoma detected*.

Liver—In the severer cases some enlargement of the liver could usually be made out, this varied from a half to two inches below the costal margin, the edge being smooth, defined and tender.

Nervous system—The symptoms present were consistent with those characteristic of anaemia, and were mild in nature, and in no case did the anaemia result in organic nervous conditions.

Cases of peripheral neuritis were not uncommon, but only in one case were the two conditions simultaneously present and the clinical features of the two diseases were quite different.

Respiratory system } No special features
Genito-urinary }

Circulatory system—Symptoms were those associated with anaemia, and so far as the heart was concerned, functional in character, the pulse was usually frequent, small, regular and of low tension.

Spleen—In view of the number of cases treated for malaria, and the general prevalence of anaemia, the two conditions were mentally associated, but no definite relationship between these conditions could be established. In a small percentage of the anaemia cases the spleen was just palpable, in one case there was marked spleno-megaly, but in this there were evidences of malaria. The two conditions, malaria and anaemia, were, *pari passu*, rare, the anaemia of, and co-existing with malaria improved under quinine treatment. In the cases of anaemia the administration of quinine in efficient dosage was not only valueless, but was contra-indicated. Only in 4% could the spleen be felt in cases of anaemia, the liver was enlarged much more frequently.

Examination of the Blood—The blood was examined in all cases, and was made with a view to ascertain the presence of malarial parasites, the haemoglobin percentage, and the differential leucocytic count.

The percentage was taken by Sahli's method, and Talquist's scale and according to the severity of the cases shewed results, from 30%—45% leucocytosis was present.

The following shews a differential count made in a series of four typical cases they were severe cases, and had suffered relapses. In the disease relapses were of very frequent occurrence.

Differential leucocytic count (percentages)

	1	2	3	4
Polymorphs	33	61	38	50
S Mononuclears	60	34	58	36
L Mononuclears	3	35	2	3
Transitional	6	11 5	2	11

"Haemoglobin index was not taken."

The so-called 'Transitional' were rather peculiar. They had polymorph nuclei with granules which did not stain well. They were of fan size the protoplasm in between was basophil. The blood picture in some of the slides was one of pernicious anaemia. Poikilocytes, nucleated reds with the nuclei in a condition of disintegration. In some cases microcytes, macrocytes, with nothing of much note as regards white corpuscles constituted a fairly typical picture. There is manifestly a heightened activity of bone marrow and a destruction of red bloods, perhaps in the liver. The cause is obscure. The blood picture is such as one sees in some cases of chronic malaria ankylostomiasis leucæmia, tape worm and I think leishmaniasis may be excluded, perhaps the latter not entirely. The stain was giemsa throughout. Spleen and liver punctures shewed no parasites.

Diagnosis—The two conditions which might give rise to these symptoms, and which presented themselves to my mind, were chronic malaria, and ankylostomiasis.

As regards the former, the malarial incidence in 1911, the proximity of an extensive swamp which harboured anopheles, together with the unsavourable nature of the climate was evidence in support of a malarial origin, but the absence of a malarial history prior to admission for anaemia, in some cases, and the negative results on repeated blood examinations, the state of the spleen, and the failure of quinine as a remedy, made it difficult to accept a malarial origin. The resemblance to accepted versions of ankylostomiasis was clinically close, particularly as regards the gastro-intestinal symptoms, and the accompanying anaemia, also the widespread distribution and increase of ankylostomiasis in the States suggested the likelihood of such an infection, but no proof was forthcoming after repeated examinations of faeces, by different observers at

different laboratories. There were no skin lesions where an entry might have been effected. Thymol was, however, given an efficient trial. Vegetables, including pan, were obtained locally from Chinese cultivators, and *ascaris* infection was prevalent, but no other form of intestinal parasites were found.

Whatever the cause, toxic or parasitic, the result in the severer forms was a profound alteration in the normal mechanism of blood "equilibrium," such as one sees in anaemia of a pernicious type. Improvements under treatment seemed in many cases only temporary, and relapses were the rule, the worst cases went steadily down hill, and seemed to have lost all power of recuperation.

It occurs as a theoretical suggestion that an activating substance, possibly reversible in its end results may be normally responsible for the control of both haemogenesis and haemolysis, and this is destroyed or rendered inert owing to an alimentary toxæmia, autogenous or otherwise. Accepting the portal circulation as being the site of blood destruction, and the liver as being the final disintegrator of haemoglobin, re-utilising or rejecting the products of this disintegration, it seems possible that both activating agent and the toxin responsible for its alteration originate in the alimentary system.

An alimentary source is suggested by the prevalence of gastro-intestinal symptoms in all cases which came under my observation, but its nature is obscure. Certain it is that oral sepsis could not have been responsible in many cases. The enlargement of the liver, unless this was entirely due to blood destruction which is unlikely, and the condition of the stools would support such a contention. As regards haemogenesis, it is logical to assume that the disorderly production of red corpuscles by, and the considerable structural alteration in, the bone-marrow is the sequence of extensive haemolysis, but the absence of a normal activating agent, controlling production, would give similar results, and it is inconceivable that the source of this activating agent is in the liver. It is thought that the liver is a likely source for anti-thrombin, and the production of this other substance or agent may have a similar origin. It is also a point that the two tissues are in intimate relation with each other.

As regards recent mortality, three men have died, so far as is known, who suffered from this condition of anaemia since the regiment arrived in India on April 17th—one at his own home and two in hospital, the latter from intercurrent diseases, both suffering towards the end from profuse diarrhoea. The milder cases went home on three-and-a-half months' furlough.

As regards treatment Quinine and Thymol were tried. Emetin seemed to do good in some cases as regards intestinal symptoms.

Arsenic and its compounds checked and in some cases improved this condition.

THE CLEAR PUPIL AFTER CATARACT EXTRACTION

BY V. R. NESFIELD, R.R.C.S.,
CAPTAIN, I.M.S.,
Civil Surgeon, Banda, U.P.

MAJOR BAIRD'S description of his experience with cataract in Gonda* seems to suggest that nothing more than a clear pupil is required in a cataract operation, and that patients are contented with their vision after operation by Colonel Smith's method with an iridectomy. I do not think that this contentment is proved by such large numbers coming for operation, for it appears that a large number of his cases were done near the patient's own villages.

I consider that a clear pupil is only half the battle—it must also be round and react otherwise the sight can never be comfortable or perfect. A wide pupil with blurred sight is no doubt a blessing to a blind man, but it is only half a gift and sooner or later brings disappointment to the recipient. Major Baird tells us that most of his cases were satisfied to go away without spectacles, and though no doubt all were offered free glasses few returned to take them.

I do not think that this is only due to slackness on the part of the patients, or to the low degree of sight these people are content with.

To understand the sight of a man after operation for cataract a minus 10 lens may be held in front of the eye—vision becomes very blurred. On placing a plus 10 in front of the minus glass the vision is cleared.

But let us carry the experiment further. Fully dilate the pupil and stand in the sun or even in the shade on a clear day, the glare is intolerable and painful, and vision not much better than when a -10 lens is placed before an undilated normal eye.

Now place a -10 lens in front of the dilated pupil, vision of course remains blurred, but the pain and glare are at once relieved, as now light is not focussed on the sensitive area of the retina.

This explains, I think, the reason that so few out-of-door workers apply for spectacles.

In villages there is a good deal of discussion among people who have been operated on for cataract, they talk over their experiences, and should a man in the village have a pair of cataract spectacles, they are passed round, tested and judged. If the clearing of sight is found to be as the experiment I have indicated of placing a -10 lens in front of the eye and then compounding it with a +10, it stands to reason

the operated would return for a free pair of spectacles and even pay for them

But, as I have found from experience, spectacles do not give this improvement when there is a large pupil, on the other hand, a man who has been successfully operated on by a Sutta or by the old method without iridectomy very frequently takes to spectacles as his sight is so vastly improved. This is due to the active pupil.

I can further bring out this point. I aim at removing the lens in its capsule without altering the aperture of the pupil or its activity, and in the great majority the pupil is sound. Each of my patients is given the pair of spectacles which suits him before he leaves on the 7th day after operation, the test used is dot counting.

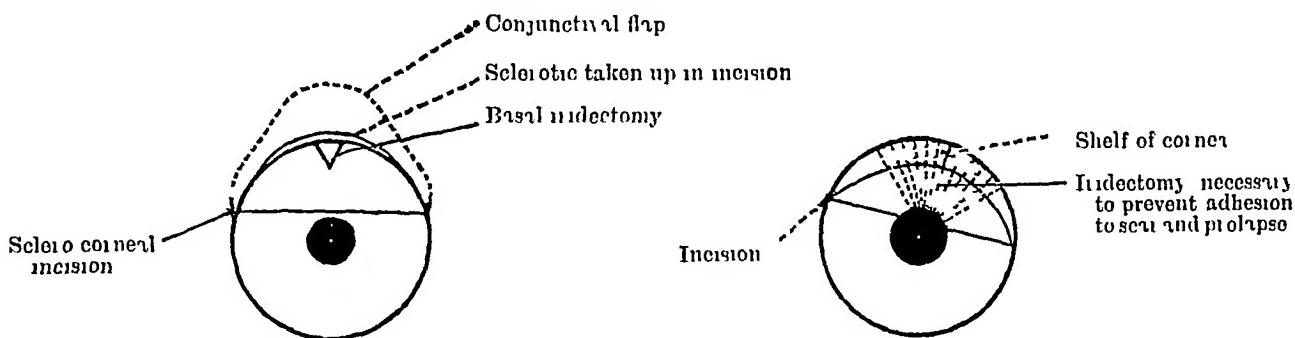
Quite frequently some of these people return and complain that their eye-sight is not so good as when they left hospital. I find in nearly every case that this is due to the lens being unsuitable, and on giving a stronger (usually) pair of glasses +12 in place of his original +10 the sight is again perfect. Or, in other words, a man who has a normal pupil after a cataract operation appreciates a defect of +2 sphere, and yet I find that when the pupil is wide and immobile,

Though this incision is the only right one for expression, it is the wrong one for maintaining an intact pupil as a glance at the figure will show.

If a sclero-corneal incision is made with a conjunctival flap, one courts disaster if an attempt is made to express the lens. On pressing little herniae of vitreous covered with hyaloid appear through the fibres of the suspensory ligament above (an iridectomy must be done to see this), further pressure usually brings about a catastrophe, an escape of vitreous before the lens has even been dislocated. As an intact pupil is a necessity for good sight, it is obvious that Colonel Smith would advocate this, and that he finds an intact pupil incompatible with his method of expressing the lens. How can one overcome this difficulty? i.e., an intia-capsular operation coupled with an intact pupil?

I think that the answer is clear dislocate the lens by some intia-ocular manoeuvre which does not strain the hyaloid membrane.

The great majority of surgeons use a capsulotome, why not modify the instrument, make it blunt and smooth to prevent it tearing the capsule, pass it a little further into the eye, and tear the



he does not value the improvement of a +10 lens.

I have not mentioned astigmatism, but I invariably find after Colonel Smith's incision there is an astigmatism of +2 cyl.

How then can a lens be removed in its capsule without an iridectomy, and yet insure no prolapse, and no astigmatism?

The answer is by making a sclero-corneal incision, and at the top of the cut taking up a small slice of sclerotic, and a good piece of conjunctiva.

But Colonel Smith's incision is the only right incision, and he has evolved it, because it is the only right and possible one when the lens is expressed in its capsule, because the shelf marked X anchors the top of the lens and so helps supporting, and at the same time gives support to the hyaloid membrane and so saves the vitreous from bursting. Or when the lens is of a resistant nature, and presents with its upper pole first, the ledge tears the upper portion of the ligament.

ligament, either directly or indirectly, by gently pulling the lens bodily upwards with the hook of the instrument placed on the edge of the lens. The lens once dislocated is just as easily delivered as in Colonel Smith's operation. To still further ensure against a prolapse of the iris, and other troubles, it is as well to cut a small hole in the base, but not so large as to catch the lens.

Now for the obvious objections.

1. Bleeding.—This is very greatly reduced or quite prevented by dropping in a little adrenalin chloride 1 in 1,000 (Parke Davis & Co.) 5 minutes before operating.

When the conjunctiva are injected and there are even a few small vessels ending in the margin of the cornea, there is always bleeding $\frac{1}{2}$ to 1 minute after the incision has been made. Should this enter the anterior chamber and clot it forms an almost impassable barrier to the delivery of the lens.

To overcome this difficulty, add sodium citrate 1/16 oz ad 1 oz 1% carbolic acid, immediately. This stops the blood from clotting, and any in

the anterior chamber can be easily squeezed out with a sponge

2 *Difficulty of learning the passage of the hook.*—This of course does take a little trouble to learn, but can soon be grasped after a few post-mortem experiments

3 *Sepsis*.—This is a theoretical objection and can be avoided by carefully sponging away all fluid before passing the instrument, and by previously sterilizing the conjunctival sac with 1 in 4,000 Hg Cl₂.

The sodium citrate cocaine, eserine and atropine lotions are made up with 1 in 100 carbolic acid and have a piece of camphor always floating in them to ensure sterility

I can see no other objections

I fix the orbicularis muscle by means of a piece of strapping which draws the eyebrow upwards. The lower lid is controlled by a stitch through the skin of its margin, the upper by a similar stitch or with a simple retractor made from a piece of tin.

I use no speculum

As to my results, I very rarely get an escape of vitreous, about 2 per cent, very rarely get prolapse of the iris or iritis or sepsis, and no astygmatism. That is the clear pupil of an intra-capsular operation, coupled with an active iris which shuts off automatically the intense glare of the Indian sun.

DEVIL DRIVING *

PANCHOA DEVILS—CLASSED AS "SILENT" AND "CRYING"

BY K P BAGCHI,

Medical Practitioner, Surmardia (Dist Nadia)

Of all the evil spirits that are supposed to have sway over, and are identified with some of the ailments of the nervous system, the *Panchoa* devils, though obstinate, are very mild and innocent in nature, and are even, in rare instances transferable from one individual to another. They hover over the lying-in huts of the villagers, and oftentimes possess the new-born babies with or without their mothers, and very rarely any male adults. A short description of the lying-in rooms of the villagers will not be out of place here. These rooms, which are nothing but miserably thatched sheds hardly six feet in length and four across, are temporarily built, some 2 or 3 weeks before the expected labour, in the courtyard, apart from but in close vicinity of the bed and kitchen rooms. The floor of these sheds is almost on a level with that of the yard, and if high it is hardly six inches. They are well

protected on all sides by fences made of straw and other dry vegetation, with a small opening in front, a mere apology for a door, through which a grown-up individual can by no means get in or out without creeping on his hands and knees like a child. These dens or charnel houses are supposed to be the favourite abode of *Panchoa* devils. In these dens the unfortunate women are delivered, and constrained by time-honored customs to stay there in child-bed for seven consecutive days, taking their meals there, and passing their stools and urine in a small pit dug out in one of the corners. They are not allowed to see the light of the sun, and even the faces of any friends and relatives that come to greet them, in cases of their being blessed with male issues. One cannot exactly conceive the wretchedness and the lamentably pitiable condition of these huts, unless seen with one's own eyes. The village folk, just on the delivery of their wives and daughters, are on the alert in guarding against and warding off the *Panchoa* devils, by placing at the door of the lying-in huts a skull of a cow painted with vermillion and cowries, and a quantity of cow-dung made into a human figure as a scare-crow. A thorny creeper, called *Kanta Koomari*, or *Kumari Lata* (*Smilax Laurifolia*) is also tied on to three sides of the hut, to scare away the unwelcome devil and prevent him thereby getting inside through the cracks of the fence. In spite of all this antique pirophylaxis of bye-gone or semi-barbarous ages most of the new-born children fall victims to *Panchoa* devils, by developing or manifesting tetanus and other allied ailments, and pass into eternity. The manifestation of the possession of this innocent evil spirit is the ceasing of the new born to suck at the breast, and the last of the most characteristic and reliable symptom is "*Ritus Sandonicus*". Different manoeuvres are resorted to for driving away these devils. There are some professional medicine-men, or specialists, generally *Fakirs*, and oftentimes *Muchees* (of cobbler and Skinner caste) who pose as specialists in the diseases of new-born children, and their mothers in the lying-in huts. If the poor little patients do not cry aloud, and succumb to the fatal disease, the case is pronounced by these specialists as the work of the silent *Punchoa*. If they constantly cry in agony, to the annoyance of their mothers and the inmates of the house, they are labelled to be the cases of crying *Punchoas*. Fortunately some rare and mild cases are cured by kind Nature, and these cures are attributed to the invoking of the goddess *Panchoa-Panchi*, who has some influence over the *Panchoa* devils. In almost all the villages, it is curious to note that the names *Panchu*, and *Panchi*, nicknamed as such, of hundreds of men and women, both in the upper and lower classes of people, have some close and

* This graphic account of Devil Driving is well worth publishing as a representation of the beliefs of villagers in advanced Bengal and as an illustration of the ways of some village *Kavirajas*.—Ed.

intimate relation with the *Panchoa* devils, and the goddess that holds a sway over them. Those children that recover after having been possessed by these devils are called *Panchus*. In the respectable families, the *Panchu* boys, when grown up, are called *Panchanun* (five faced), the tiny surname being modified, polished, remolded and respectfully enlarged to suit the high-class societies. But in the labouring classes the nickname *Panchu* does not undergo any marked change, but remains all along life in its crude state. Hence one can easily find in any village, or in any rural population, dozens of persons, both male and female, who are called *Panchus* and *Panchis*. A sifting enquiry into the origin of these names, so very prevalent in *mofussil* places, may reveal the whole thing as to where the derivation of these names comes from.

A recent case—a living illustration of the crying *Panchoa* devil—occurred year before last in the neighbourhood of my house at the residence of a very respectable *Brahmin* family. A male child was born to a daughter of my relative neighbour, on the 23rd July 1912, in the lying-in hut above described. On the 4th day after delivery the child's temperature rose a little over the normal curve. The mother being malaria-stricken, this rise was counted for nothing more than simple feverishness of malarial origin. The temperature was on the increase and went up on the 7th day to 104° F and over, and the mother at the same time got a sharp attack of fever with rigors. Prompt medical aid was at hand, and every possible measure was taken for the treatment of the child and its mother. The mother's fever was got under by quinine, but the newborn child was worse anything with red patches all over the chest, extending up to the left side of the head, with constant and unabating crying day and night. Medicines were being used for the little patient, but there was no wished-for relief. At this stage the headman of the family was influenced by the female members of the house to call the *Muchi* specialist, taking the case to be of *Panchoa* devil. The headman, being himself a believer in the art of devil driving, had no other alternative than to proceed at once to the village specialist, who lives at a distance of some two miles. This "expert physician" made himself conversant with all the symptoms before coming to visit the case, and pronounced a very grave prognosis. He frankly declared to the gentleman that the case was of crying *Panchoa* devil, in an advanced stage, and the eruptions on the body of the little patient would break down and form into gangrenous ulcers and the child would die after 3 days. So the wise "physician" of vast experience did not think it worth while to take up the case, having given it up for lost. The gentleman came back from the "physician's" house with a broken heart,

abandoned all hope for the dear little thing, and did nothing for it. Three anxious days with painful suspense ran on, waiting for the inevitable hour, but the child suckled the breast, though with incessant crying and showed no symptom of its clock striking the last hour. The verdict of the physician took no effect, but the inmates of the house gave up every particle of hope for the life of the child, who was made to drag a miserable existence with unremitting crying as before.

On the 16th day I requested the grandfather to bring the new born to me (myself then being bed-ridden, after a surgical operation under chloroform). The child, on examination, presented glaring symptoms of cutaneous eryseptelas with high fever, and medicines both for internal and external use were forthwith prescribed, and within a week's time there came an uninterrupted recovery. The good-looking child is now a picture of health of full 2 years.

The innocent *Panchoa* devil can be transferred from one patient to a healthy individual. A very interesting case of this transfer is on record. Some years back, as far as 1894-95, two criminal cases were instituted at the Subdivisional Officer's court at Mehpur in Nadia. A family of cultivators of the *Mahishya* caste, consisting of four brothers, lived at an outlying village under the jurisdiction of the Alumdanga Police Station in Nadia. One of the brother's wife gave birth to a child, and whilst in the lying-in hut, immediately after delivery presented some symptoms peculiar to insanity. Taking the case to be of *Panchoa* devil, the eldest brother, or the headman of the family, lost no time in seeking the aid of a specialist in devil driving, Muzdeen Kaviraj by name. The *Kaviraj* just on visiting the patient had no difficulty in diagnosis, and adopted a very simple and polished method of treatment. He took a scrap of paper, and wrote on it some incantations, quite in a symbolic and pictorial language, addressing the devil *Panchoa*, in the shape of an authoritative missive, commanding him to leave the patient at once, on pain of torture and persecution. This letter was tied on to the top of a big bamboo some 30 feet long, which was pitched in front of the patient's house. Both in the early morning and after dusk the latter was taken down and its contents were read aloud to the devil, in a sing-song tone, and replaced *in situ* on the top of the bamboo again. This method was supposed to have taken effect, and the patient somehow or other felt little better. The upshot of this treatment did not end at the house of the patient alone. To the utter surprise of the villagers, a healthy young man, one of the close neighbours of the female patient, all of a sudden, without any appreciable cause, shewed symptoms of insanity. The villagers were not slow to conclude

that the *Panchu* devil had been transferred from the female patient to this man by the *Kaviraj*. Acting under this superstitious belief, the brother and the near relatives of the man proceeded in a body to the house of the female patient, and taught poor Muzdeen a good lesson by belabouring him with *lathis*. On being confronted by the friends of Muzdeen, the infuriated mob grossly assaulted the husband of the female patient and his brothers, forcibly entered the house, broke down the lying-in hut, the very abode of the devil, and, in so doing accidentally struck its inmate, the newly delivered woman.

Two criminal cases were instituted—one by the headman of the house of the female patient and the other by Muzdeen himself. Both the cases were made over to the Bench Court of the Honorary Magistrates at Chuadanga in Nadia, for trial, and the accused were all convicted in the first case. But Muzdeen being a man of liberal views, or of "forget and forgive" principle, was unwilling to proceed with the case at its last stage. And I, with my colleague, as an honorary magistrate, disposed of both the cases by writing out a lengthy story of the prosecution, somewhat in a prosaic and romantic fashion, on the lines laid down by the S D Officer as a case of "transferring an evil spirit."

ASCARIS LUMBRICOIDES INFECTION IN MALABAR DISTRICT.

By T K GOBINDAN NAIR,
Sub Assistant Surgeon, Coonoor

IT IS no conflict with truth and experience to assert that Malabar is the most unfortunate land of round worm infection in the whole Madras Presidency. My short experience does not overstep the bounds of this Presidency, and as such, I cannot reasonably long claim to a first-hand knowledge of the relative prevalence of this disease in Indian provinces. Nevertheless, I am inclined to think that no other place can have a preponderance over Malabar in this respect. The unhygienic method of disposal of the night-soil and the excreta, the shallowness of most of its wells, the dirty habit of many of its folk, its peculiar climate and the vegetarian life of most of its people are among the most potent contributions towards the exuberant propagation of these human foes. Picture to yourself a compound with damp soil, with no definite arrangement for privy accommodation, the wells or rather the apertures for them, shallow, unpartitioned and without any cement lining, dug at a spot which has the lowest level in the compound, the whole compound an expanse of wading streams and stagnant pools in the rainy season and the unprotected wells swelling up with the sub-soil drainage, picture these alarming out-

ages to sanitary principles and you have a clue as to how these parasites flourish in Malabar. The embryos swarm in the filthy pools and thence they proceed to the wells in overwhelming numbers, viz., the sub-soil drainage. In the damp soil they find an unmolested recluse, alike in the vegetation. The drinking of unboiled water drawn out from these wells, and the consummation of vegetables in an improperly cooked condition and even flesh, form the parts of invasion of the human system by these foes. Children of all ages harbour them in alarming disproportion to adults and, if a child in a household escapes these unwelcome visitations, it is but an outstanding manifestation of divine intervention. Children are freely left to play about in the mud with no covering for their body and in their innocent warfare with the earth, they lodge some poisonously charged mud in their mouth and finger nails. Again, the attention of parents to the cleanliness of their children being everywhere at a miserable discount in the present sad condition of their knowledge of household sanitation, these little folk, without their hands and mouths being cleaned, are propped up before food-stuffs which they pack down their throats with cormorant avidity. When once these parasites gain an entrance into their body, they play such havoc of destruction on their hosts that only personal experience can convince. My short experience in the Cannanore Municipal Hospital has most convincingly impressed on me some, if not all, of the phases of their rivalry in the hospitable intestines of the human host. Now I will deal with the case as it manifests itself in various stages of the life of the host.

IN CHILDREN

It has already been said that children are more susceptible to round worm infection. When once the enemy finds its way into their tender systems, its tenacity to the host is so pronounced that after a time there is more life in the guest than in the host. The child's appetite fails, then comes nausea and with it vomiting. Diarrhoea with frothy stools appears next and nutrition fails. Blood is impoverished in quantity and quality, the mucous membranes become pale, the complexion becomes sallow and pale as in chronic secondary anaemia, hair falls out, fatty tissue disappears, the ribs and other bones become prominent landmarks. The chest becomes apical towards the front, the abdomen protrudes as though it were an inflated toy balloon tied on to a stick, and the legs appear as two slender sticks stuck into either side of the flattened out glutri. The child has no sleep, fits of convulsing and agonising abdominal pain are constant accompaniments. The whole body and especially, the mouth imparts a repulsive smell, the vulva in

girls becomes inflamed and swollen by constant scratching brought on by the irritation of the anus by the parent worms lodged in the rectum, the child cannot walk without tottering, it becomes bed-ridden and very often parasitic dysentery, less frequently bronchopneumonia, closes the scene. Such is the progress of the disease when no medication has checked its march. I cannot fail to remember a case outside which I was called in to see. The patient, a girl of 13 years, was tossing on the floor, rolling about from side to side, dashing her head against the floor and yelling with excruciating abdominal pain. All the household was in tears and the girl's sufferings more appealing beyond endurance. A devil's play was suspected by the folk and my necromancy with the magical santonine drove out the devil the next day. People would not believe that I was no enchantress with satanic credentials.

Many children die from the fits or from chronic inanition due to gastro-intestinal catarrh. Scabies and abscess development all over the body are later complications in a vast number of cases. I have often seen cases of chronic catarrhal ophthalmia and buccal ulceration in these subjects. These concurrent pathological manifestations clear away after the successful treatment for worms. There is a very high death-rate from round worm infection in Malabar and the causes of infantile mortality as shown in the village vital statistics are invariably a gross misrepresentation, often due to want of expert examinations.

IN ADULTS

Here the picture of constitutional wreckage is not so alarming as in the young. Loss of appetite with abdominal pains and nausea, often simulating chronic alcoholic gastritis, are the constant manifestations in adult patients. In them the symptoms and signs put the physician on the wrong track.

How worms called for an operation for appendicitis

A woman, aged 22 years, was admitted in the Cannanore Municipal Hospital. She had a temperature of 102° F., a quick and feeble pulse, vomiting, constipation, tenderness over the right iliac fossa and a swelling at the same site. The right lower extremity was drawn up, there was severe pain complained of over the appendical area. Otherwise the woman was not nourished. In the night there was a vigorous rise of temperature to 104° F. The swelling increased and the suffering aggravated. An acute appendical abscess and formation was suspected. Early next morning the woman vomited two worms. This unexpected development and the resolution of the very acute symptoms put something fresh into our minds and a full dose of santonine followed by a saline purge cured the "appendicitis" quite miraculously. A good number of worms formed into a ball was passed out and every other accompaniment subsided. The tumor was due to a huddled up mass of worms in the cæcum, there was constipation from

the carrier thus formed, the pain was probably due to the tension on the gut wall or the worms piercing it, the vigour and the evening rise of temperature was due to intercurrent malarial infection, as was shown by the subsequent blood examination. Another case in my private experience was that of an adult patient which very closely simulated acute obstruction of the bowels. All the symptoms and signs were quite pronounced. A forced turpentine enema cleared the obstruction by bringing down a mass of worms. The number of worms that will be present in a host is always alarming. A child of 18 months once passed 90 mature worms before me and having thus delivered her enormous conception to the broad daylight of the earth, the poor thing very silently merged into the tranquil sphere of eternity. Thirty may be taken as the least number inhabiting a human host.

Cases of peritonitis following upon the passage of the worms into the peritoneal cavity or of asphyxia by obstruction of the trachea by worms climbing up the gullet and getting down the wind-pipe have never been seen by me. But instances of worms coming out through the nose were not seldom. I had occasion to take out three mature worms from the vagina of a girl three years old.

In Cannanore and even other places it is no uncommon thing to see the first three days of the puerperium of the lying-in woman marked with a rise of temperature. You may swear by the "Seven Gods" that the accouchement was scrupulously aseptic. A dose of santonine with a castor oil purge will clear you uneasiness. I even go to the extent of saying that a routine treatment for worms two days after the confinement is no questionable practice in Malabar. Pyrexia in association with round worms infection is no rare feature in children. The pathology of this may be explained by the theory that a sort of alimentary auto-intoxication from the catarrh of the bowels and the chemical and mechanical products of the animal activity of the worms therein, perverts the functions of the thermal centre in the corpus striatum.

Microscopical examination of the blood though of no decisive value in diagnosis, is yet reflective of some important pathological features. As I stated already, the signs of secondary anaemia are present. Besides, there is a relative preponderance of the eosinophiles, as in infection by ankylostoma duodenale or *tænia echinococcus*. The diminution in the number of the polymorphon is not often of a remarkable nature.

Now coming to diagnosis, I am inclined to think that one cannot experience much difficulty. The physical signs and symptoms do not betray us often. Microscopical examination of the stools is one's decisive resource. In a vast majority of cases attending the hospitals in Malabar, the ova of the ascaris appear in the stools. The technique of the examination is quite simple. A very small drop of the frothy stool is taken with a stick and put on a clean slide. A clean cover slip is put on it, as in preparing a fresh blood

film It is better to remove the top of the condenser, so that you can get a wider pervasion of light on the stage Examination is conducted with the $\frac{1}{6}$ " lens The morning stools are more productive. In Cannanore and other places you can have no cause for repentance if your preliminary medication for a patient, especially a child, is directed against worms Surely enough in 90 % of cases, you are not on the wrong track

The prognosis is almost invariably hopeful

There is so far nothing novel in the treatment of these cases In adults, a full dose of santonine with a few grains of sodiu bicarb and calomel in a single bed-time dose followed by a castor-oil purge in the morning forms the treatment The simple details of the treatment are, to my judgment, to be carefully attended to The powder should be taken at least two hours after supper and the castor-oil is best given at 5 A.M. It is prudent to give two ounces of the oil to an adult to ensure a complete evacuation I have found that the subsequent administration of a mixture containing one drachm of Sodiu Sulphas and five mins of Ti Nux Vomica to the ounce, three times a day, conduces to a radical cure In places where round worm infection is prevalent one will do well to treat pregnant woman for worms once in a month Care is often required in the treatment of young patients Here the tender constitution of the young patient will very often revolt in the very expectant moment of your warfare against the foe When the patient is very feeble, the aim of the physician is to bring about a gradual elimination of the enemy The depressant effect of santonine is always to be borne in mind, especially when dealing with debilitated children of tender age The treatment in such cases is carried out once in a week and continued for one month My routine prescription for a child of one year has been as follows —

Santonine -	gr 1
Sodiu Bicarb	grs 11
Hydrarg Subchlorid	gr 1
Mel depuratum	min v

to be mixed up well and made into a thick cream which is divided into two equal parts, one part being given at bed-time and followed by a two-drachm dose of castor-oil in the morning and similarly with the other half on the following night The doses of santonine and calomel are regulated according to age The advantages of this treatment are threefold The honey in the cream gives such a sweet taste that the child takes the whole thing without the least reluctance The creamy consistency of the medicine allows of its being placed on the tongue and being well mixed up with saliva is easily swallowed Another advantage lies in the fact that, in the event of the child refusing to take

castor-oil—a circumstance which very often occurs—the calomel will act as a cathartic and will ensure a desirable alimentary flushing out and disinfection. The usefulness of this combination will appeal to your judgment when you know of a very trying case I had to deal with The patient was a girl aged about 5 years. She was in a very bad state of health. There was diarrhoea, vomiting and pyrexia Two worms had passed out in the vomit I administered santonine with only some soda powder In the morning she refused to take castor-oil, she would not have a drop of it The people around the patient allowed the little domestic despot to have her own way, with the result that one of them came running to me at noon on the next day I went to the place and saw my little patient in a critical state She explained the circumstances to me, the child had not passed a single motion, her abdomen was distended respiration was embarrassed and there was fever, The pulse was very frequent and quite feeble. The worms in the bowel had been killed by the anthelmintic administered on the previous night, but nothing had flushed them out In the gut they lay in a state of commencing decomposition and septic absorption had taken place The seriousness of the situation at once rushed in my mind, and my humble resources pointed out to me the desirability of giving a soap and water enema The whole sewage canal was flushed out by this and a saline purge and there was immediate relief after the enema

The prophylaxis of this malady should be the first thing to be arrived at Attention to an uncontaminated water supply by the application of the principles of sanitary engineering in the construction of wells and houses, scrupulousness in the cooking of food-stuffs, strict avoidance of unboiled water and vegetables for drinking and eating purposes, improved means of sub-soil drainage, a very hygienic method of disposal of the excreta and attention to the propriety of maintaining a decent looking compound are among the most important features in prophylaxis Personal prophylaxis consists in not allowing children to play about in the mud. Rich people should provide protection for the body of their children The mother or the nurse should see that the hands and mouths of children are cleaned with warm water before the latter lay their hands on food stuffs Scratching the anus and biting the finger nails afterwards is a nasty habit in some children which should be put a stop to by threats and even thrashing More than all these, and the most far-reaching in its ultimate results, is the adoption of an intelligent and popular means of persuasion of the elements of personal and domestic hygiene among the masses It is known and deplored that half or even more of the

number of deaths occurring in the villages of Malabar can be averted by adherence to a hygienic plan of life. These are places where the redeeming story of the rays of Western civilization has not yet penetrated the self-constructed barrier of inveterate ignorance, to dispel the expensive envelope of mental gloom,—a fact, which, it is fervently hoped, time will ignore and pack off into the dreamlands of oblivion and pre-historic antiquity

A Mirror of Hospital Practice.

RUPTURED EXTRA UTERINE PREGNANCY 5 6 MONTHS LAPAROTOMY

DELAYED CHLOROFORM POISONING ? RECOVERY

BY C C BARRY,

LIEUT COL, I M S,

Superintendent, Civil General Hospital, Rangoon

NAME of patient Mah O, age 36, sex female, caste or class Burmese, occupation bazaar seller, result cured, date of admission 23rd September, 1913, date of discharge 6th November, 1913

History—Married for 15 years, number of pregnancies, *nil*, number of children *nil*, number of miscarriages, *nil*, date of last confinement, *nil*, date of last miscarriage, *nil*, date of last menstruation, three days ago. Slight blood-stained discharge still present

Previous history—Three and-a-half months ago she felt pain in the left iliac region, which lasted for nearly a month. The pain was severe but unaccompanied by faintness or nausea. When the pain came on she noticed a swelling in the left iliac fossa, which has since steadily increased in size, though she has been free from pain up to 10 days ago. The pain that then came on has got steadily worse, and is now very acute and the swelling very tender. Has been regular in her menstruation, the last period occurred 3 days ago. Has never had any profuse vaginal haemorrhage. Has no reason to think she is pregnant

Menstrual history—Age at first menstruation 17 years, regularity once in 4 weeks, quite regular, duration 3 days, amount in no way excessive, pain none.

Inter-menstrual discharge—Character none

Functional disturbance of bladder—Has pain and difficulty in passing water. Rectum has pain on defaecation.

PHYSICAL EXAMINATION

General appearance.—Well nourished, but looks anxious and ill. The breasts are enlarged and

the glandular tissue appears to be hypertrophied. No milk in breasts

Temperature 100° F

Abdomen.—There is a large, prominent, globular and smooth swelling of indistinct outline, rising out of the pelvis and extending upwards in the left flank as high as the 10th rib, and from there across the abdomen to the right as far as the umbilicus. The swelling appears to fill the whole pelvis, is fixed and very tender.

Per vaginam.—The swelling fills nearly the whole of the pelvic cavity, extending low down and obliterating the pouch of Douglas. The uterus can be made out slightly enlarged and pushed well over to the right side of the pelvis. The swelling is fixed, but elastic and gives the impression of semi-solid cyst.

The abdomen is generally distended and signs of commencing general peritonitis are present.

Alimentary system.—Tongue coated and somewhat dry, appetite *nil*, vomiting none, condition of bowels constipated, liver of normal size, not tender.

Circulatory system.—Pulse full and regular, 108 per minute, heart normal.

Respiratory system.—Breathing somewhat hurried, chiefly thoracic, lungs normal.

Urinary system.—Urine quantity, colour straw, special gravity 1014, albumen *nil*, reaction acid but not markedly so, sugar *nil*.

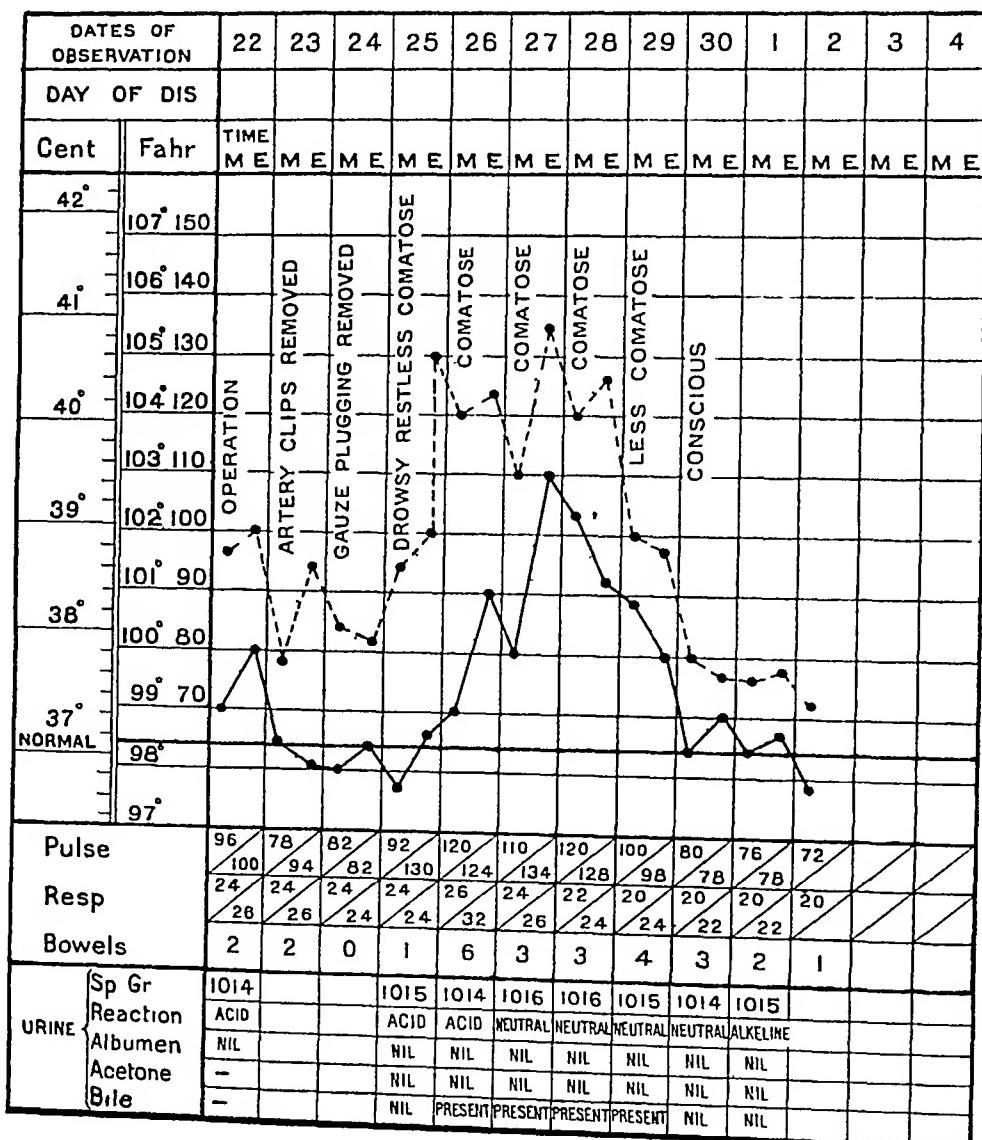
22nd September 1913 Chloroform Median Laparotomy.—Incision about 7 inches long. The whole of the anterior aspect of the tumour was covered by congested and blood infiltrated omentum with greatly dilated veins. The omentum which was firmly adherent to the front of the tumour was removed, exposing a smooth walled cyst of a dark red colour. The pelvis was also seen to contain about 10 ounces of fresh blood. On examining the relations of the cyst, a small tear was found at the lower and left side of the tumour, from which blood clot was exuding. The upper and right side of the cyst was smooth and free, the lower and left part widely adherent to the left side of the pelvis and to the uterus which was incorporated into the front of the cyst wall. The rectum and pelvic colon was also incorporated into the posterior wall of the cyst. On introducing a finger through the rent in the lower part of the left side of the cyst, the wall which was as rotten as a wet blotting paper tore widely, exposing a large cavity full of blood clot and a placenta which was lying on the posterior and left wall of the cyst.

The placenta which was extensively thrombosed was rapidly stripped off and removed, and with it a 5-6 months' foetus. There was very free haemorrhage from a large vein which from its position was thought to be the internal iliac vein greatly dilated. The bleeding was controlled by several long clips, but it was found impossible to

RUPTURED EXTRA UTERINE PREGNANCY 5-6 MONTHS
 LAPAROTOMY DELAYED CHLOROFORM POISONING?
 RECOVERY

By Lt Col C C BARRY, I M S,

Superintendent Civil General Hospital, Rangoon



pass any ligatures owing to the depth of the bleeding point and the rotten state of the tissues which were extensively infiltrated with blood, nor for this reason could the ovarian artery or vein be identified and safely ligatured. No attempt could be made to remove the cyst wall owing to its intimate relations to the rectum, pelvic colon and uterus. The cyst wall was therefore sewn to the lower part of the abdominal wound, the cyst cavity being plugged with gauze and the artery clips left in position. The upper part of the abdominal wound was closed in the usual manner.

The patient was considerably collapsed from loss of blood, but on the whole stood the operation well. Intravenous saline infusion was not given as owing to the rotten state of the cyst wall and the infiltrated condition of the surrounding parts there was considerable doubt if all the bleeding points had been secured. The foetus was quite fresh and evidently had been living to within a short time before the operation, though the head was much flattened owing to pressure from the surrounding parts. It was a well formed male, 5-6 months' growth.

Subsequent History—23rd September 1913—Patient rallied quickly after operation and has slept fairly well. Is now quite comfortable. Artery clips removed from abdomen.

24th September 1913—Patient doing well, is cheerful and bright, no pain, gauze plug removed from abdomen and cyst cavity lightly replugged with aseptic gauze.

25th September 1913 8 a.m.—Patient seems drowsy this morning and keeps her eyes closed. The eyelids and face are slightly puffy. The conjunctiva slightly jaundiced, temperature normal, pulse 110, urine sp gr. 1014, reaction very acid. No albumen, acetone, sugar or bile present.

3 p.m. Patient very restless throwing herself about in bed, screaming and grinding her teeth. Jaundice has markedly increased.

26th September 1913—Patient became unconscious in early hours of the morning and is now in a state of coma. Oedema of face has increased and oedema is present in hands and feet. Urine Gr 1014, bile present. No sugar albumen, or acetone present. Reaction markedly acid. Motions light coloured but seem to contain fair amount of bile.

27th September 1913 & 28th September 1913—Patient remained in a state of complete coma and could not be roused, marked jaundice present of conjunctiva and other mucous membranes. Urine as above neutral in reaction.

29th September 1913—Patient less comatose, opens her eyes when spoken to, but does not speak. Jaundice less marked. Oedema as above. Urine neutral in reaction.

30th September 1913—Patient much better, quite conscious and speaks readily. Jaundice much marked, oedema of hands and feet present as before, urine as above except reaction is neutral, and no bile is present.

1st October 1913—Patient quite bright, has no recollection of the last few days. Jaundice disappearing, oedema much less. Urine alkaline.

2nd October 1913—Oedema has disappeared, slight jaundice present, doing well. Urine alkaline.

6th October 1913—Jaundice has disappeared. Urine normal, neutral in reaction. Patient doing well and gaining strength.

6th November 1913—The patient has made a good recovery and is fit for discharge from hospital. The sac containing the extra uterine foetation has become

obliterated and the abdominal wound has firmly healed. Whether she will develop a ventral hernia is doubtful. The surgical after-treatment of this patient gave no trouble, though there was some sloughing of the edges of the extra uterine sac where it had been sewn to the lower part of the laparotomy incision.

The sac cavity was irrigated twice daily with tr. of iodine solution and kept loosely packed with gauze.

The case appears to be of considerable interest both from the primary disease for which the patient was admitted and on account of the secondary symptoms occurring some 2½ days after the operation and which I can only attribute to delayed chloroform poisoning.

As regards the primary disease, it would seem this was a case of tubal pregnancy that had ruptured into the broad ligament some months previously. The ovum had continued to grow between the layers of the broad ligament stripping the peritoneum off the pelvic wall as high as the brim of the pelvis and forming a pedunculated tumour attached to the pelvis by a broad base. In growing, the rectum and uterus had become incorporated into the sac wall and the omentum had become firmly adherent over its anterior surface. Eventually the cyst wall had ruptured causing acute abdominal pain and effusion of blood into the abdominal cavity.

It seems probable from some cause haemorrhage had taken place into the cyst cavity from the placenta and so had determined the rupture of the cyst, since the cyst cavity was greatly distended with blood clot and the vessels of the placenta itself markedly thrombosed.

The symptoms—Possible causation and pathology of delayed chloroform poisoning have been so ably discussed by Munro and White in the October 1913 number of *Indian Medical Gazette* that any further comment is superfluous, but as this patient recovered it would be well perhaps to give a short summary of the symptoms she presented.

The patient rapidly rallied from the severe operation she had undergone, had a normal temperature for 48 hours and was exceptionally bright and well. There was no abdominal distension and practically no pain, in short, she seemed on the road to rapid recovery. The first symptom noticed was drowsiness, with slight jaundice and slight oedema of the eyelids. Twelve hours later the patient was restless and noisy with a rapid pulse and a quickly rising temperature, the jaundice had also markedly increased. In eight hours more the patient was deeply comatose, remained so for 3 days and then gradually recovered consciousness. The coma was profound, the evacuations were passed unconsciously and all medicine and nourishment had to be given by a nasal tube. The jaundice at first sight became well marked and bile appeared in the urine, it gradually faded away.

The temperature and pulse rate is given in the accompanying chart, both rose rapidly and then more slowly declined

The urine was examined before the operation and was apparently normal, it was examined daily from the time drowsiness was first noticed, it never contained any acetone, but was markedly acid. Subsequent examinations disclosed no abnormal acidity, though the alkalies were stopped

No albumen or sugar was ever found in the urine which appeared to be passed in normal quantities, though no accurate measurements could be taken as the patient when comatose passed her evacuations unconsciously. Previous to the onset of the symptoms the urine had been passed daily in normal quantity

There was never any vomiting. The treatment consisted of diachm doses of sodæ bicarb every hour, given every hour for the first 24 hours, 4 hours for 48 hours, and finally every 6 hours till the urine became alkaline and remained so

How far this treatment acted in obtaining the patient's recovery I am unable to say, but I have no doubt the unremitting care and attention the patient received from the nursing staff and the Sub-Assistant Surgeon in sub-charge of the ward was the chief factor

A NOTE ON THE SURGICAL TREATMENT OF GOITRE IN TIBET

BY G. B. HARLAND, M.D. (Lond.), D.P.H.,
LIEUT., I.M.S.,

M.O., British Trade Agency, Gyantse

In the *I.M.G.* for June and October, 1913, appeared articles advocating the more general surgical treatment of Goitre in India, so the notes of a few cases treated in the Civil Hospital, Gyantse, during the last few months may be of some interest. I agree with the writers of the above articles that this is an operation which may be undertaken without any difficulties or complications, the chief danger we have to contend with here is sepsis, Tibet and the Tibetans being famed for their dirt and the hospital itself being located in an old Tibetan house. However, I found that by a liberal use of Trinct Iodï before and after operation and the substitution of silk ligature for cat-gut, sepsis can be avoided

The anaesthetic used was chloroform, administered by the sub-assistant surgeon, and my assistant in each case was a Tibetan dresser

Case I—Tibetan male, aged 24. The goitre dated from childhood and was now increasing in size, a large fluctuating swelling involved the right lobe of the thyroid

A transverse curved incision was made, and the cyst, six inches in diameter, dissected

out without any difficulty. The remainder of the gland apparently was normal, a rubber drainage-tube was inserted and removed on the fourth day, there was a large amount of serous exudation, but recovery took place uneventfully

Case II—Tibetan male, aged 25. In this case the left side and middle line were affected and the goitre dated from childhood

Preliminary treatment with Augt Hyd Ox Rub externally, and Pot Iod and later, Salol, internally, reduced the swelling to some extent. Permission for operation being obtained, a "collar" incision was made across the neck, and a cysto-adenomatous mass was found having its origin in the left lobe, but projecting over the middle line, the right lobe and the isthmus apparently were normal

It was excised and a drainage tube inserted and left in for three weeks, as there was some septic infection of the wound, which proved rather troublesome. Complete recovery eventually took place.



Case III

Case III—Tibetan female, aged 33. This was a large irregularly shaped goitre, most marked on the right side, but also affecting the isthmus and left lobe, owing to its size, it was decided to do the operation in two stages

Operation 1—After making the transversely curved incision, the right portion, a fibro-adenomatous mass weighing $9\frac{1}{4}$ oz., was excised, haemorrhage proved very troublesome as the veins were greatly engorged. Healing of the incision took place uneventfully.

Operation 2 (This had to be delayed for some months, as the patient developed a septic condition of the skin of the neck)

A curved incision was made over the tumour and a further incision at right angles to this was necessary, as the mass, which weighed 8 oz, was found to extend down behind the clavicle

It was very adherent to the trachea and oesophagus, and some time was taken in dissecting out the recurrent laryngeal nerve. A small drainage tube was placed in lower angle of the wound and removed next day, uninterrupted recovery took place

Case IV—Tibetan female, aged 23. Duration since childhood. An irregularly shaped goitre, extending to both sides but most marked on the right side, one or two nodules could be felt, but it was mostly of a soft consistency

A curved incision was made over the right side, it was found to be an adenomatous mass extending up to the level of the hyoid and was dislocated with some difficulty. Weight 5 $\frac{1}{4}$ oz. As haemorrhage proved rather troublesome a gauze pack and drainage tube were inserted and removed on the second and third days, respectively

Healing of the incision took place, and ten days after the operation the thyroid swelling on the left side had also disappeared

ANAGNOSTAKIS' OPERATION FOR TRICHIASIS

By SOMERTON CLARK, F R C S E,
Mission Hospital, Kashmir

SOME time ago in another paper there was a symposium on the subject of which was the best operation for trichiasis. The contributors described many methods, but here in India where trichiasis is so common the operation performed by Anagnostakis has not received the attention which it deserves, so I wish to bring it before the attention of your readers. During the past three months I have performed it more than a hundred times. No operation for trichiasis meets the need of every patient suffering from this disease, but if I were suffering from the usual form of trichiasis I should wish the surgeon to perform this operation on me

The following description of Anagnostakis' operation is taken from MacCallum's "Trachoma in Egypt"

1 "Anagnostakis' incision is carried out after the entropion spatula has been inserted by making a superficial cut along the whole free border of the lid just posterior to the lashes. It should be $\frac{1}{2}$ or 1 mm deep owing to the tension exerted by the sutures. In Snellen's operation the lips of the incision gape apart, allowing further

eversion of the lash bearing area. The greatest care must be taken to avoid leaving any hair bulbs in the posterior lip of the wound. If this happens they must be picked out with the point of the knife. After the first dressing on the 4th or 5th day a dressing should be reapplied daily until epithelium has covered the raw surface left by the gaping Anagnostakis' incision."

2 "Anagnostakis' operation for the upper lid. The incision along the free border of the lid formed part of an operation first suggested by Anagnostakis. This operation is suitable for cases in which there is no thickening of the tarsus and for cases of partial trichiasis. The entropion spatula is inserted under the lids which is thereby put on the stretch by the assistant. An incision is then carefully made along the whole free border of the lid immediately posterior to the lashes, but without injuring them. It should be from $\frac{1}{2}$ to 1 mm. deep."

If a hair bulb is cut through the proximal extremity will be seen as a black dot on the posterior surface of the incision, this must be picked out with the point of the knife

Another incision is made along the whole horizontal extent of the lid 4 or 5 mm. above the lashes. The lower edge is undermined down to the roots of the lashes. The upper edge is undermined for 2 mm. The orbicularis is cleared off the tarsus. The sutures are now inserted. The needle must be entered through the lower skin flap near to but above the lashes in front of the cartilage. A horizontal bite of the cartilage near its upper border is taken with the suture and the needle returned through the lower skin flap 3 or 4 mm from its entrance and in a corresponding position. Four such sutures are inserted, 2 mm. being allowed to intervene between each suture. The tarsus being deficient at the inner angle of the orbit the horizontal bite with the suture is taken through the soft tissues which replaces it as high up as possible

The wound is washed and the sutures tied and adjusted. A few additional touches of the knife may be required for the incision in the free border of the lid to make it gape and lie nicely. A few skin sutures for the edges of the wound are required."

When I visited Lucknow in March I saw Major A. E. J. Lister, I M S, performing the following modification of this operation. Lister removed the anterior surface of the cartilage by paring it with a von Graefe's knife and then inserted four Anagnostakis' sutures. He informed me that this is the operation performed in Vienna and that the operation gives the best cosmetic results and the recurrences after it are fewer in number than after older operations. During the last four months I have had the opportunity of doing 129 operations for the

relief of trichiasis and the technique I usually employed, is

(1) Inject 30 m of 1% novocain Lister recommend the addition of adrenalin to the novocain. After 10 minutes begin the operation

(2) Insert the left forefinger into the superior fornix and use it as a spatula throughout the operation.

(3) Make an incision parallel to the free edge and 3 mm from it beginning close to the punctum superius and ending near the external canthus

(4) Expose this length and breadth of the tarsus.

(5) Incise the whole length of the tarsus 2 mm. above the lashes

(6) With a very sharp knife cutting from above downwards remove 3 or 4 half moon-shaped slices from the cartilage, when this is done haemorrhage always occurs from a small artery at the inner third. After this proceeding very little remains of the cartilage except

- (a) a lower bar carrying the lashes,
- (b) an upper serrated portion,
- (c) vertical ridges

(5) As the cartilage is deficient at its nasal end insert the first suture first through the lower edge of the skin, then take a horizontal bite of the soft tissue and then through the upper edge of the skin

(6) Insert three more sutures in a similar manner through skin and cartilage, judging with the left index finger the depth and length of the bite (4 mm) through the remains of the cartilage

(7) Close the wound by making a double twist on each suture, which should be black horse-hair, not silk

(8) If the horizontal fissure is small cut through the external canthus with a strong pair of scissors.

This operation cannot be satisfactorily performed by the average hospital assistant, it requires more care than he bestows on his cases, and during one's earlier cases chloroform and not novocain should be given

EMETINE AND YOUNG CHILDREN

By C NEWTON-DAVIS, M.B., B.S. Lond.,

CAPT., I.M.S.,

M.O., 18th K.G.O. Lancers

I THINK the following case is perhaps worthy of publication as I have seen no case reported demonstrating the great value of emetine in the treatment of young children

On the night of April 18th I was asked to see an officer's child in consultation

History—Aged 10 months Born in England and arrived in India in November, the child had always been healthy except for an attack of acute middle ear disease six months ago, which quickly cleared up

On April 15th—The child had what was thought to be an attack of diarrhoea Four or five loose motions were passed and the patient vomited once, she cried a good deal that day and seemed to be in pain, she was given a dose of castor-oil

April 16th—Child seemed a little better but still cried and was very restless Stools five in number, yellow in colour, she did not take her nourishment well

April 17th—Child not looking so well Temperature for the first time 100° Vomiting and diarrhoea all day Mucus appeared in the stools followed later in the day by streaks of blood Ipecacuanha in four-grain doses of the powdered root was given from the morning, three times a day However, as the child was continually sick it is doubtful if the drug had any of the desired effect

April 18th—When I saw the child the general condition was very bad indeed The face was drawn, pale and earthy looking with dark rings round the eyes The temperature was 102° and the pulse 140, very small in volume and of low tension. The child had had 22 motions in the preceding 24 hours I saw the last motion passed It consisted of a jelly-like mixture of blood and mucus but no trace of faecal material The child was lying on its back with knees drawn up and was constantly moaning It strenuously resisted any examination of the abdomen.

We decided to give emetine at once $\frac{1}{6}$ grain of the hydrochloride in tablet form was dissolved in water and given subcutaneously in the pectoral region This was to be repeated every 12 hours All milk was stopped and the child given 2 oz of albumen water sweetened with sugar and flavoured with lemon every 2 hours In the intervals as much water was given as the child would take

April 19th—General condition much improved. Only vomited once Motions decreased by half their number and became faecal. In the evening temperature fell to normal The emetine was continued

April 20th—Motions free from blood and four in number Milk was resumed

April 21st—The child was convalescent and made an uninterrupted recovery, until April 23rd occasional traces of mucus appeared in the stools, after that they were quite normal.

In all $1\frac{1}{2}$ grains of emetine were administered, i.e., seven doses of $\frac{1}{6}$ grain

Indian Medical Gazette.

SEPTEMBER.

THE ENDEMIC TYPHOID AREA AND THE WAR

THAT the terrible war which at the moment we write is being carried on in Alsace-Lorraine may have other horrors added to it will be understood when it is remembered that this is par excellence the endemic area for typhoid and that for ten years past German scientists have been carrying on a great campaign against enteric carriers in this very region.

It will be remembered that in 1905 Major E. D. W. Greig, C.I.E., I.M.S., was deputed to study anti-typhoid measures in this very country and his report led to the introduction of the same methods into the British army in India, with the happy result of getting rid to a very large extent of this once most fatal scourge of the young British soldier in India. Major Greig's report is at the present day full of a painful interest. He visited the special anti-typhoid Institutes at Saarbrucken, Neunkirchen, Metz, Diedenhofen and Trier.

The work of these Institutes which up to the outbreak of the great war was still being carried on, was based on the following facts —

(1) That typhoid or enteric is spread largely by the bacilli being directly carried from the sick to the healthy by carriers, that is by "contact infection," and if the bacilli gain access to the water supplies the result is an "explosion epidemic."

(2) That the living bacilli continue in the excreta and urine for long periods after the fever has ceased. Such individuals are "bacilli carriers" or "reservoirs" of the parasite.

With characteristic thoroughness the German Government established eleven institutes for this antityphoid campaign in Alsace-Lorraine at the following places—Trier, Saarlouis, Saarbrucken, Oldenburg, Kaiserlautern, Landau, Neunkirchen, Diedenhofen, Metz, Macenau, and Strassburg.

Each Institute had a defined area of work. Material is sent in by the medical men in charge of cases and members of the Institutes visit the affected villages, and endeavour is made to trace each epidemic to its source. It is necessary to find out (1) if the cases are imported, or carried

by food, by men with typhoid, or if a local "typhoid house" exists.

That much good work has been done in the last ten years by these Institutes is certain, but they are still at work and the prevalence of typhoid which still exists may become a very serious menace to the myriads of troops and followers now collected in this war area.

It is generally believed that the French troops are better protected against enteric than are the German soldiers. We know that the prophylactic inoculation method of Sir A. Wright has been very largely used by British troops and the French have largely followed our example, and we believe that these precautions will prove of great advantage in the weeks before us.

THE PROPOSED NEW GENERAL HOSPITAL FOR MADRAS

WE recently had an opportunity of seeing some of the excellent medical institutions of Madras. The Madras Maternity Hospital and the Madras Ophthalmic Hospital are well-known as up-to-date, complete and ever advancing hospitals, so it was not unnatural that it has been felt by the Government of Madras that the time had come to give Madras a new General Hospital corresponding to its needs and equal to the other medical institutions of the city.

The question of the reconstruction of the old General Hospital, Madras, is one which has been under consideration for several years, and in 1909 a committee reported on a scheme for the renovation of the present hospital, construction of new nurses' quarters and improvement to the college buildings. This involved the filling up of an arm of the savoury river Cooum, a matter which proved too difficult to be practical. Readers of Lt.-Col. Crawford's *History of the I.M.S.* will find an account of the early hospitals in Madras and of the present General Hospital. The first hospital was opened in Madras in 1664 in Fort St. George, a second hospital was built between 1679—1688 by public subscriptions at a cost of 838 'pagodas.' It stood in the Fort and belonged to the Church and Vestry.

The third hospital was erected during the governorship of Elihn Yale (a name known in two hemispheres in connection with education)

It stood in James Street in the Fort and was a handsome building which cost 2,500 pagodas.

In 1698 the Madras Council took over charge of this hospital from the Church.

During the siege of Madras in 1758-9 by the French a hospital existed within the Fort and in 1759 it was removed to two churches in Armenian Street where it remained for 13 years.

In 1770 Surgeons Briggs and Pasley submitted to Government a letter urging the necessity of building a new hospital without delay, and the Chief Engineer was ordered to prepare a plan. Its final cost was 42,000 pagodas. By 1772 the hospital was reported as completed and equipped, and one of its two blocks is probably represented by the most westerly of the existing buildings. From this hospital of 1772 the present General Hospital, Madras, descends in direct line. For long years it was a General Hospital, European and native, civil and military, and it was not till 1899 that the whole block of buildings became a purely civil institution.

In May 1913 a fresh committee was appointed under the presidency of Hon Mr A Butterworth, ICS, and the views of the majority are summarised in the following, which we quote along with the Government Resolution on the report —

"(1) that in order to secure a hospital fulfilling modern requirements an entirely new set of buildings must be erected,

(2) that the site on which the General Hospital now stands is open to such strong sanitary objections as to render removal to another site highly desirable,

(3) that of the sites likely to be available, preference should be given, in the order named, to

(a) the Ordnance Lines Maidans,

(b) the site of the Penitentiary to be used as supplementary to the site of the present hospital, and

(c) the Spur Tank site.

The Government have given their careful consideration to the recommendations. They observe that while a considerable body of non official opinion is opposed to the rebuilding of the hospital, the medical officers who were consulted were unanimous in holding that only by entire reconstruction will it be possible to obtain a hospital fully adapted to modern requirements of medical treatment and education. In this view the Government concur. Next, as regards the selection of site, military considerations preclude the appropriation of the Ordnance Lines Maidans to this purpose, and the occupation of the Penitentiary site, besides involving the removal of the prison, would not, in the Government's view, go far to remove the objection on the score of noise and dust to which the hospital is at present exposed—nuisances which are likely rather to

increase than to diminish. The third site, that of the Spur Tank, has been criticised on the score of remoteness from the more populous centres of the city, a member of the Committee, in particular, instancing the Royal Infirmary at Manchester as a case in which removal to the outskirts of the city had injuriously affected the attendance. So far from this being the case, however, the Government learn from the Secretary to the Infirmary (whose letter is among the papers read above) that the transfer of the hospital to its new site was followed by a marked rise in the number of persons treated. Moreover, as Mr Butterworth shows, this objection is material only in the case of Tondiarpet and Georgetown, and will lose most of its force when the new Royapuram hospital, now under construction, is opened. In all other respects, in salubrity, and as affording not only ample space for a General Hospital and a Medical College on approved lines, but also room for expansion, the Spur Tank site satisfactorily fulfils the conditions required, and indeed affords the only solution of the problem. The Government have accordingly decided to adopt this site for the construction of the new buildings."

The preparation of plans has been actively taken up, and it has been stated that the cost will approximate 80 lakhs, or say over £50,000, not a very big sum for a large and up-to-date hospital in these days.

Current Topics.

THE MEDICAL DESPATCHES

SIR PARDEI LUKIS has done the Service a good turn by obtaining the publication in the *Gazette of India* (August 1, 1914), of the correspondence between the Secretary of State and the Governor-General in Council.

We hope that steps will be taken to widely circulate these despatches. The newspapers only quote the final despatch and but few medical men ever see the *Gazette of India*. As the published correspondence runs to over 21 large pages of the *Gazette of India*, it is obvious that in these columns we can do no more than briefly indicate to our readers the contents of the whole.

The correspondence now published begins with a letter from the Governor-General in Council to the Secretary of State, and is dated 17th November 1910.

It begins by referring to Lord George Hamilton's letter of 4th May 1899 in which the then Secretary of State referred to the increase in the numbers of the I M S between 1884-1899, and pointed and asked if it was contemplated to increase the I M S to keep pace with the growing needs of India, and stated that it was of material importance to place "No impediments in the way of the spread throughout India of an 'independent' medical profession". Lord

Gizou's Government, while generally agreeing as to the need of an 'independent' profession, was of opinion that 'such a development must be a slow and gradual process'."

The Government of India take pains to point out that at this point a misunderstanding arose, while Lord George Hamilton had in view the encouragement of European medical men to settle in India in this country several local governments insisted that the main object of the despatch was "the transfer of a considerable number of appointments now held by a service mainly European" to medical men of Indian nationality. This the Governor-General pointed out is one of the subsidiary points for consideration.

The next (part 4) portion is so important that we must quote it in extenso—

"In 1908 we pointed out that about one third of the civil appointments now held by the Indian Medical Service do not form any part of the war reserve, and that consequently there would be no objection, from a military point of view, to then transfer to medical men not belonging to that service. Starting from that premise we concluded that, subject to certain specified conditions, a considerable number of the appointments not included in the war reserve might gradually be transferred to medical men not belonging to the Indian Medical Service. We had not at that time had the advantage of the opinions of local Governments, and we regret to find that we *gravely underestimated the objections, on other grounds than those connected with the requirements of the Indian Army in time of war*, to the transfer of appointments which we contemplated. We have now given the whole question our most careful consideration in the light of the opinions of local Governments. We recognise most fully the importance of encouraging the growth of a private medical profession and the impossibility of the Indian Medical Service being expanded so as to meet all the medical needs of India. But we feel bound to recede from the position which we previously took up, because on further consideration of the question we are convinced that the mere transfer of a certain number of Government appointments from the Indian Medical Service to private practitioners would do practically nothing to encourage the growth of an independent profession, that most of the civil appointments now held by the Indian Medical Service could not suitably be given to men not in regular Government service, with whom then private practice would be the first consideration, and that the retention of a considerable number of superior civil medical appointments for the Indian Medical Service is essential, not only in the interests of administrative efficiency, but also for the purpose of making the service itself attractive to able medical men. In short, while we adhere to the views previously expressed, that it is impracticable to provide from the Indian Medical Service for the growing needs, beyond the ordinary administrative duties, of the country in respect of medical relief, we hold strongly that the appointments now held by officers of the Indian Medical Service are required strictly for ordinary administrative duties, which cannot suitably be performed by men otherwise recruited.

The Despatch goes on to consider what Government should do to encourage the development of the independent profession, and, it is pointed out that if a large supply of medical men trained in Western methods is to be provided, there must be a large demand for them, and it is shown that in their present state of ignorance the mass of the people are still content with the *kabiraj* and *hakim*, and

a demand for Western methods only exists in the cities and big towns and "the mere transfer of certain appointments from the I. M. S to private practitioners" would do no good. A Civil Surgeon now-a-days has but little private practice and his time is "mainly taken up with administrative duties". Government can however (the letter goes on to state) assist the development of an independent profession by increasing the Government schools, by throwing open house appointments in Government hospitals to qualified men, whether in Government service or not, and by encouraging new medical schools to be conducted by medical practitioners and by associating private practitioners in honorary capacities with the staff of Government hospitals, by limiting the abuse of hospitals by well-to-do patients, and further by the registration of all duly qualified medical practitioners.

The letter next discusses the question of how far I. M. S. appointments operate to discourage the growth of independent medical men, and they quote the opinions of local Governments to the effect that the replacement of I. M. S. men by other practitioners will lead to a loss of efficiency and result in no net increase of the total number of practitioners.

The importance of not doing anything to lower the attractiveness of the I. M. S. is then discussed. Of the total number in civil employ, two-thirds represent the necessary war reserve, and they point out that Lord Morley's Despatches of 9th August 1907 and 11th December 1908 "have given rise to widespread uneasiness" and quotations are made from the *B. M. J.*, *The Lancet* and the *Indian Medical Gazette* on this point. The difficulty of recruiting for the I. M. S. is then shown. A strong letter from the Government of Bombay is quoted and "other Governments are equally emphatic" on the need of the Civil Surgeons being whole-time servants of Government. The vital matter of providing European medical men for attendance on the persons and families of officers of the European services is strongly insisted upon.

"We sum up our conclusions as follows—

(1) An independent medical profession trained on Western lines is steadily growing up in India, but it has yet to overcome its universal rival in the form of the *kabiraj*, *hakim*, *vaid*, *ojha* and the like, who are trained according to indigenous methods and whom the mass of the population still trust.

(2) Government can do much to encourage an independent medical profession in the various ways enumerated in this despatch.

(3) The giving up of a few appointments to private medical practitioners will have no appreciable effect on the development of an independent medical profession, and might, on the contrary, tend to hinder a healthy development.

(4) The present policy of reduction, which was inaugurated without previous reference to the local Governments, has already given rise to considerable uneasiness in professional circles, and, if carried further, is likely to cause a decided deterioration in the Indian Medical Service.

(5) The bulk of the civil surgeonies must be manned by officers of the Indian Medical Service, exceptions being made in favour of civil assistant surgeons

(6) The Government medical colleges and schools must, in the main, be manned by officers of the Indian Medical Service, but a few professorial posts can be made available to locally recruited men

(7) European medical men cannot be expected to establish themselves in this country, except in cities and large towns and in special areas where there is a large European population, and it is, generally speaking, undesirable to recruit from among them

(8) When European medical men are required, they should usually be recruited in the Indian Medical Service Indians and Europeans recruited locally in special cases should be employed on special terms"

There is much more of interest in the letter for which we cannot find space We must however quote some extracts from the Secretary of State's reply dated 22nd November 1912

"2 I may say at once that after a full examination of the despatch and its enclosures I accept the view of your Government that the question of the steps to be taken to promote the growth of the unofficial medical profession must be treated as distinct from the question of limiting or reducing the civil cadre of the Indian Medical Service, and that I am in general agreement with your Government on both questions For this reason, instead of following in detail your predecessor's examination of the recent discussions in which these two questions have been considered in relation to one another, I propose to state, without direct reference to the previous correspondence, the conclusions to which I have been led by my own examination of the question

3 In the first place, I am much impressed with the military considerations involved The efficiency of the Army in the event of mobilization requires that a War Reserve amounting to at least two-thirds of the civil cadre of the Indian Medical Service should be available at short notice, and no more economical method of providing this reserve has yet been discovered

There is also a large proportion of civil posts, including the highest administrative appointments, amounting to hardly less than one third of the whole cadre, which it would be most unwise in time of stress to entrust to others than members of a trained and disciplined service It is also, I believe, generally admitted that the attractiveness of the Indian Medical Service to young doctors is largely dependent on the number and character of the civil posts, and to diminish this number materially or to withdraw even a comparatively small proportion of the higher posts hitherto included in the cadre could not fail to have an unfavourable effect upon recruitment, and consequently upon the efficiency of the whole service, both on the civil and on the military side Furthermore, in the interests of the Western system of medicine generally including those of the unofficial medical practitioners themselves, it is desirable, at least, for the present, to maintain a system by which in every part of the country demonstrations of its practical value will be continuously afforded by medical officers of undoubtedly good qualifications. Moreover, it is impossible to disregard the special needs of European officers and their families. I am thus unable, under existing conditions, to contemplate any substantial reduction of the service"

Then follows the present Government of India's despatch No 2 of 1914, dated Delhi, 5th March 1914, which we quote in full

"We are glad to learn that Your Lordship has accepted the view of Lord Minto's Government that the question of the steps to be taken to promote the growth of the unofficial medical profession must be treated as distinct from that of limiting or reducing the civil cadre of the Indian Medical Service Our predecessor's despatch of

the 17th November 1910 suggested a variety of methods by which Government could assist or, in some cases, was already assisting, the development of the unofficial medical profession in India, and we indicate briefly the subsequent developments of some of the questions then raised —

(i) The questions of the registration of medical practitioners, of the growth of unofficial medical institutions and of penalising bogus medical degrees have been considered further, and we forward for Your Lordship's information a copy of our Home Secretary's letter of the 23rd May 1913, which has been addressed to local Governments and Administrations on the subject We feel no doubt that reforms on the lines indicated will commend themselves to all those who have the interest of medical education in India at heart, and we trust that before long something effectual will be done in the direction indicated

(ii) In February 1911 we consulted selected local Governments with regard to the suggestion to employ passed students of medical colleges, whether they enter Government service or not, as house physicians and house surgeons in Government hospitals, a plan which had commended itself to the Government of Bengal, but in view of the generally unfavourable replies received we decided not to proceed further with this specific proposal

(iii) The suggestion to associate selected private practitioners with the staff of Government hospitals has been received favourably by the majority of the local Governments

(iv) The question referred to at the end of paragraph 6 of the despatch of the 17th November 1910, has been disposed of by the issue of the resolution on the subject of gratuitous medical assistance in charitable hospitals and dispensaries, which Your Lordship had approved in your Public despatch No 252, dated the 6th December, 1912

2 Your Lordship has left it to our discretion to decide whether effect can usefully be given to the suggestion that, as far as possible, civil surgeonies not reserved for the Indian Medical Service should be given to civil assistant surgeons instead of to military assistant surgeons This matter has had our careful consideration, but we are strongly averse from any reduction in the number of civil surgeonies held by military assistant surgeons or of any redistribution of the proportion of posts held by this class of officer There are altogether 712 military assistant surgeons in the cadre, of whom 164 are serving under local Governments, but the total number of civil surgeonies reserved for them is only 51 The question of reducing the proportions of independent to subordinate posts held by military assistant surgeons, by the substitution of civil assistant surgeons in the independent appointments was considered in 1903, when it was decided that no change was necessary, as it was feared that such a proposal might tend to discourage military assistant surgeons of the best type from becoming candidates for civil employment, and of seriously affecting recruitment for the Service To that opinion we still hold All military assistant surgeons in civil employ are liable to recall for active service, and they constitute an important part of the war reserve Since they already fall short of the number required for complete mobilization, any reduction in their number would, in our opinion, be a grave mistake Some of them possess exceptional qualifications, and the majority make up in administrative capacity what they may lack in professional ability, and given equal medical attainments, the military assistant surgeon frequently makes a better civil surgeon than a civil assistant surgeon We have under consideration proposals made by our Director-General of the Indian Medical Service to provide facilities for the better medical education of military assistant surgeons, and when effect is given to these recommendations the professional qualifications of these officers should be greatly improved

3 There are several proposals pending before us for an increase of the civil cadre of the Indian Medical Service, which we shall hereafter submit separately for Your Lordship's orders In all these cases we hope that

we will be able to show that, looking to the work to be done, the services of Indian Medical Service officers are indispensable. In view of the growing medical needs of the country which necessitate the employment of a larger staff of medical officers, *some expansion of the Indian Medical Service is inevitable*, and such expansion should not, in our opinion, be regarded from a different stand point from the enlargement of any other cadre in response to the development of the work to be performed."

SURGERY IN THE TROPICS

A very interesting discussion took place at a meeting of the Society of Tropical Medicine and Hygiene on a paper by Mr J. Cantlie on "Some Aspects of Surgery in the Tropics." It is certainly a remarkable fact that no book of any size (beyond a very useful pamphlet on four common operations in India) has appeared on Surgery in the Tropics.

Mr Cantlie writes —

As regards the actual performance of surgical operations, there is, of course, no essential difference in the actual manipulations necessary, whether the operations be conducted in the temperate or the torrid zones, but surgeons practising in warm climates have certain ailments brought more frequently to the operating table than is the case in more northern parts. There are also many other considerations which the surgeon practising in the tropics has to deal with, which were not encountered during his medical training in Britain. In the first place, the patients are natives or they are Europeans living in a climate which is not that of their native land. Both these groups present new physiological entities to the medical officer newly out from Britain, and, therefore, have to be considered by him before undertaking any serious surgical operation. The environment is also apt to cause astonishment and some bewilderment to the surgeon when he first sees the operating room. The heat necessitates open windows, which he has been taught to regard as a surgical offence of heinous dimensions in his European school, the presence of the punkah over the operating table causes annoyance, as it delays the patient's going under the anaesthetic, and is also apt to cause chilling of the contents of the abdomen if a laparotomy is being performed, on the other hand, should the punkah be stopped, the operator is horrified to find the sweat from his face dripping into the peritoneal cavity of the abdomen he has opened. These and many other minor points arise in operating theatres in tropical countries which shew that there are environment difficulties which at first seem alarming but which soon subside. The windows of the operating theatre may be open, but they must be screened in the first place to keep out flies, mosquitoes, etc., and dust as well. In the non-manufacturing cities of the tropics, where coal fires are rarely used for cooking or warmth, the atmosphere is much less polluted by dust than in European cities, but even at the expense of somewhat lessening the ventilation of the operating theatre, it is a good plan to have a double screen to the windows and doors of a room in which operations are done. It is only when one notices the amount of dust that falls down between the layers of the double gauze screen that one appreciates to what an extent dust does exist in the air of places in the tropics, where factory chimneys are unknown and the air appears vividly clear.

Hypodermic syringes are a constant source of trouble. If of glass and vulcanite, or of glass and metal, they soon leak where the glass barrel joins the vulcanite or metal, owing to the heat softening the one and causing alternate contraction and expansion of the other. The syringe made of all metal (or all glass) is better, and it was my insistence on this point to which we owe the all

metal syringe of to day. The needles should not be of steel for these corrode after use in a few minutes in a dry climate, and even if the wire is put immediately after use into a wet needle, the wire becomes a fixture. Irido-platinum is the only form of needle which should be sent to the tropics, they keep their sharpness longer than gold points and they have but little tendency to corrode and get blocked thereby.

About the equipment of the surgeon himself. He is expected when he takes up his duties, whether it be in the Civil Service or in private practice, to be fit to perform any and every operation, for from a study of the operations in the hospitals in the tropics it will be found that the most serious major operations are of common occurrence. How and where a young man of say 24 years of age is to learn his operative surgery is a mystery. He may learn ligature of arteries, amputations, and excisions of joints from the dead body, but although these were the bane and end all of surgery 30 years ago, they are but of secondary importance today. He may also learn the mechanism of short circuiting the bowel on the dead body. A dead body operation is not surgery, however, as we know it to day, and is but a poor training to one going out abroad where he has to deal with diseases requiring acquaintance with skilled clinical manipulations.

It is the absence of training in clinical surgery that causes many a young man to dread taking up work abroad, where he is expected to be a specialist in everything and to be fit to operate on whatever comes along. It is scarcely fair to send out a young man thus equipped, but the difficulty is to know how it is to be removed, where is a young man of 23 or 24 to get the opportunity of performing operations. He may have been a house surgeon, yet he may never have had an opportunity of actually doing a major operation, even an amputation of a limb, in the hospital in which he served. It would be well were there established a *clinical school of operative surgery*, where men who have joined the Colonial Service, may, under the supervision of the surgeons in the hospital, be given certain operations to do. This should be a regular course. We are sending out our young men well equipped to work intelligently as physicians, but we want them trained in surgery as well, for unless they have actually done the ordinary operations met with in tropical practice they will not be at ease, nor have the confidence necessary to do "anything that may turn up."

What are these operations?

To this Mr Cantlie replies, hernia, very common in the tropics, amputations, abscess of the liver (on which, as we might expect, Mr Cantlie has much of interest to say), ruptured spleen, filariasis and elephantiasis, bilharzia infection, oriental sores.

From surgery the discussion drifted away to the rarity of "acute rheumatic fever" and the general opinion agreed with opinions not infrequently stated in these columns in past years that this specific disease is rare and certainly not as common as in Europe.

In any discussion on this point one will hear individual medical men mention one case they have seen, but will agree with Sir Havelock Charles who said in the discussion that he had only notes or references to two cases. He claimed that the matter was *sub judice*, but in spite of individual experiences the disease is certainly rare.

On the subject of surgery, Sir Havelock's remarks are worth quoting as they will be found

to agree with the experience of many I M S men —

"With regard to young officers, how to get them blooded. When a man joins the service and goes out to, say, India, it is a very easy thing for him to attend the nearest Civil Hospital and make friends with the Civil Surgeon, and when it is found he desires to do some surgery he will get work. Were I the Civil Surgeon I would not give my patient to any man who came in and said he would like to do the operation. It would not be honest to the patient, because we must remember that many are called to surgery but few are chosen. There is a point, and it is the curse of the present age. A hundred years ago it was not easy for any man to become a surgeon who was not fit. Nowadays, owing to chloroform, owing to asepsis, owing to the great improvement in surgical instruments, he is a poor fool who cannot begin surgery. He finds out afterwards

One or two words with regard to operations. It has often struck me that in the many excellent text books on tropical diseases for men to take abroad with them, one great blot characterises them all, and that is the small attention that is given to the description of surgical operations. There is not a single text book fit to read on surgical operations. Certain of them describe operations as done years ago, and such methods give a very high mortality—in one operation of over 11 per cent, whereas, the proper method should be followed by only one half per cent death rate. Here then is an opening for the London Tropical School to bring out a small brochure on surgical cases and their treatment in the tropics. I think it would be really valuable. Take the case of elephantiasis. I do not know any bloodier operation than a bad case of elephantiasis in the hands of a man who does not know how to manage it. The first case I saw terrified me—the man died—I was not the operator. The second case was a little better, he lived, but it made up my mind for me that I would either give up surgery or improve upon the method. I consider in this operation the mortality rate should not be over one half per cent."

There is no excuse for the bungling descriptions of these elephantiasis operations which are perpetuated in the text-books. A reference to the book by the late Lt.-Col John Maitland of Madras, or to previous volumes of the *I M G* will show how the operation is done by men thoroughly acquainted with it, e.g., Sir Havelock Charles, Lt.-Col J. T. Calvert (who had great experience at Cuttack), or Kenneth Macleod.

There are other surgical operations by no means purely tropical, e.g., stone and cataract in which even the average civil surgeon is miles ahead of the London specialist.

There is no doubt there is room for a good book on Surgery in the Tropics, and we are strongly of opinion that a good course of operative and emergency surgery would be of far more use to 90 per cent of men who take courses in "tropical schools" than weeks spent in mastering the bionomics of mosquitoes, snakes, rats, fleas or lice.

Research is vitally necessary and should be in the hands of special men. The ordinary practitioner in the tropics, be it India, Africa or the further East, must or should be first and foremost an all-round man and able to do emergency surgery or gynaecology, and to a majority of medical men such a knowledge is infinitely more

useful than and a minute or profound knowledge of parasitology.

TWO TERATA OR MEDICAL CURIOSITIES

By a strange coincidence we have recently heard of two examples of very similar teratological monsters, one of which is shown in the accompanying photograph. The first case* was reported to us by Lieutenant-Colonel E. Dolson, I M S (retd.), whose attention was called to the curiosity by the guard of the train at Bisra Station (B-N Railway), only a superficial examination was possible while the train halted. "The twins were very healthy looking and well nourished, they lay on their backs in a shallow basket and were said to be 6 months old. So far as a hurried



examination could show, there seems to be a sexual, seemingly one anal opening and a couple of inches higher up on each side a small opening through which urine came. The body and head of each child seemed perfectly formed."

The next case was reported to us by Mr J. Makeig Jones, I C S and he forwarded the photo and the following note made by the Sub-Assistant Surgeon:

"A Telm of village Fulana, P S Manganj, gave birth to a double monster on 9th April, 1914. It was born alive and lived for 3 days, but died on 12th April, 1914.

Result of post mortem examination held on 13th April 1914—Twin fuscuses, united by their trunks, having two heads well covered with hair, four hands and three legs, two in the front and one at the back, with 7 toes. Sex female, anus one, near the leg at the back.

On opening the body the following were found and noted—Stomach one and common, liver common and obliquely extended from right to left. Spleen two, kidneys two, bladder one, intestines common. Sex (female) common, hearts two, aorta common and lungs four."

A reference to that wonderful compilation, Gould and Pyle's *Anomalies and Curiosities of Medicine* (W B Saunders, 1900), will show that monsters of every kind and shape have been born and are there described. These authors classify these terata or monsters under 12 headings, of which we may enumerate a few—(1) union of

* [A detailed account of this case has just been received and will shortly appear.—ED.]

several foetuses, (2) union of two distinct foetuses by a connecting band, (3) fusion of two foetuses by a bony union of the ischiu, (4) fusion of two below the umbilicus into a common lower extremity, (5) bicephalic monsters, &c. The double monsters are not uncommon, the best known examples being the Siamese twins and the Newport twins. The Siamese twins were exhibited all over the world, and a "stupendous" amount of literature has collected about them. They were called Eng and Chang and were born in Siam in 1811. The father was Chinese and the mother Siamese. The mother was 35 years old when they were born and had previously had four normal children. A merchant named Robert Hunter saw them in 1824 and Prof J. C. Warren of Harvard University examined them in 1829, at which time Eng was 5 ft 2 inches in height and Chang 5' 1½". They were Chinese in appearance. They were exhibited in London in 1829. After their European tour they went back to America and settled down as farmers in North Carolina, under the names of Bunkei. At the age of 44 they married two sisters, and had 11 children between them, all healthy and strong. The feasibility of an operation to separate them was discussed by leading surgeons—e.g., Thompson, Ferguson, Syme, Sir J. Y. Simpson and Nelaton, but no operation was attempted. The point of junction was the sternoziphoïd angle by a cartilagenous band. The twins died on 17th January 1874 (i.e., aged 63 years). The arteries were found calcareous, the connecting band was cartilage with some fibres of the diaphragm but also contained a band of liver. The "Orissa Sisters" or Radica-Doddica were shown in Europe in 1893 and were in conformation similar to the Siamese twins, they were born in Orissa in 1889, the result of a 6th pregnancy, the previous ones having been normal.

Another type is the pygopagus exemplified in the Blazek Sisters, born in Bohemia in 1878, they were joined together in the lower lumbar region.

Instances of ischiopagi "are quite numerous but few have attained any age and necessarily little notoriety." The cases above reported in many respects resemble the pictures and descriptions of the "Jones twins" born in Indiana in June 1889. Their spinal columns were in opposition at the lower end.

The whole subject of terata is of interest and the reader is referred to Gould and Pyle's book for many further details.

FAMILY PENSION FUNDS

With the approval of the Most Hon'ble the Secretary of State for India, the Government of India have decided to close the present Indian Military Service Family Pension Fund to fresh subscribers after the 31st December 1914, and to establish, with effect from the 1st January 1915, a new fund to be styled "The Indian Military Widows'

and Orphans' Fund," the detailed Regulations regarding which will be published later on. It is accordingly ordered that—

(i) No subscriber will be admitted under the present Indian Military Service Family Pension Regulations after the 31st December 1914.

(ii) All those who would have been required to subscribe under the Regulations referred to above, had fresh subscribers been admitted after the 31st December 1914, will be required to subscribe to the new Fund as a condition of their appointment.

(iii) All those who would have had the option of becoming subscribers under the present Regulations, had fresh subscribers been admitted after the 31st December 1914, will have the option of subscribing to the new Fund.

The above order is one of great interest to the Service. There has been very considerable difference of opinion about the value obtained from this fund and the fact that the Fund was in no sense run on Insurance lines led many to believe that subscribers generally could get better value for the money subscribed from many Insurance Companies. This is a very debatable point, as the fact of compulsory subscription and bachelor subscriptions render it different from mere Life Insurance.

In his ever valuable *History of the I.M.S.* Lt-Col Crawford has a chapter on the Funds (ch. XXI). Here we learn that at least ten funds have existed at one time or another in which medical officers have been entitled to contribute or share. These need not be enumerated here, but a few words are needed in some of the more important funds.

The oldest of the funds established in connection with the Indian Army was "The Military Fund" or as it is better known "Lord Clive's Fund."

The foundation of the fund for invalid officers and soldiers was the 5 lakhs legacy to Clive left him by Mr. Jafor. In 1770 it was agreed that these 5 lakhs of sicca rupees, then valued at £62,833, should be set aside to provide pensions for officers, non-commissioned officers and men of the Companies' Army invalidated by age, wounds, or disease, and also for their widows, officers and men drew half pay as pensions and widows got one-fourth of the husband's pay, and these pensions from Lord Clive's Fund were in addition to those given by the Company. After the transfer of the territorial and sovereign rights of the Company to the Crown (Acts XXI and XXII Vic, cap 106) the legal representative of Lord Clive claimed, and finally in 1863 obtained, the repayment of Clive's 5 lakhs to his family and equivalent pensions were given to all entitled to such from Clive's Fund.

The Bengal Military Orphan Society was projected by Capt W. Kukpatrick in 1782, and it was soon established, with the object of educating and settling in life children of officers of the Bengal Establishment. The fund was transferred

to Government in 1866. The Bengal Military Widows' Fund was instituted in 1806 and was merged in the New Military Fund in 1824. The family pensions were handsome and the monthly subscriptions were moderate. Madras and Bombay Funds were started in 1808 and 1816. It was wound up in 1868.

The Madras Medical Fund was started in 1807 and subscriptions were made compulsory in 1824, leave as well as retiring allowances were provided and also family pensions. It was transferred to Government in 1870, but a few medical officers still live and draw their annuities. The Bombay Medical Retiring Fund began in 1829 and was taken over by Government in 1868.

The existing I M S F P Fund was established by Government from 1st January 1873, to take the place of the various older funds which had been taken over by Government. No actual separate fund exists. Government receives all contributions and assumes the responsibilities for all liabilities, *pro forma* accounts being kept and every five years a valuation is carried out and the rates of subscriptions and donations have varied from time to time according to the state of the fund as shown at the quinquennial valuations.

The Indian Military Service Family Pension Fund will therefore cease to exist on 31st December next. The new I M W & O Fund will come into force for all new comers, but up to date the detailed regulations have not yet been published.

THE SECUNDERABAD CIVIL HOSPITAL REPORT, 1913

THERE were 550 major operations done in this hospital in 1913, compared with 203 in 1911 and 361 in 1912. The mortality, too, has been reduced to 3 4 p c after operation.

The following were the chief operations performed — Appendicectomy 35, intestinal obstruction 3, abscess of liver 18, hernias 12, urostomies 26, hydrocele radical cure, 24, ovariotomy 24, laparotomies various, 26, uterine appendages, 16. Cases of infectious diseases among Indians are now treated in a separate hospital, but European and Anglo-Indian cases come to the General Hospital. The Lady Curzon ward is more than ever popular.

As regards the training of *dais* and midwives the writer of the report, Capt C H Brodrick, M.B., B.S. (Lond.), is perhaps too pessimistic. We may quote the following remarks —

"It must be remembered that many abnormal cases are brought in after having been left in unskilled hands outside until it is too late for operative interference to have its fair chance of success. Many come in in a hopelessly infected condition. The actual percentage of complicated to normal cases was 19 per cent. During the past year an effort has been made to train Indian *dais*. They are trained for two months in batches of five and it is hoped that such training will allow of their observing abnormalities earlier and sending such cases

to hospital in time, also that they will pick up the rudiments of the aseptic habit."

I have examined some at the end of their course and I must own the result is very disappointing and I very much doubt if after our expense and trouble soap and a nail brush are added to the *dais'* equipment.

It is a matter of consideration if the money would not be better spent in trying to train fewer of a rather better class and train them longer."

The report is a record of good work done.

The British Journal of Surgery has now (July 1914) commenced its second year of life. It has already taken its place as the leading exponent of surgery in the British Isles, and we are glad to see the name of Lieut-Col C R Stevens, M.D., F.R.C.S., I.M.S., added to the Editorial committee. We have lately received the first annual volume and have no hesitation in recommending this fine quarterly to our surgical readers.

The American Medical Association are publishing a new journal, devoted to Parasitology, with a distinguished board of Editors, including F D Barker, C F Craig, C W Stiles, R P Strong and J L Todd.

Reviews.

Manson's Tropical Diseases — By Sir PATRICK MANSON, G.C.M.G., M.D. Fifth Edition, 1914 London Cassells & Co. Price, 12s 6d

We heartily welcome the reappearance of this favourite volume in a new and revised fifth edition. Sir P Manson's book has been a great favourite with medical men and students ever since its first appearance in May 1898.

The new or fifth edition has been thoroughly revised and is thus more up-to-date and authoritative than the previous edition of 1907 which had been four times reprinted.

The recent advances in tropical pathology had been so many that it became necessary to largely revise this edition. Nevertheless the new edition is similar to the old and the new matter has been skilfully incorporated. Among the many new points introduced we may mention the discovery that an infantile form of Kala-azar was a common disease in the Mediterranean, the discovery of the skin or dermal form of leishmaniasis, the biological evolution of *Trypanosoma gambiense* in the insect *Glossina*, the discovery of *Glossina morsitans* as a virulent carrier in Rhodesia, the work done on 3-day fever, 7-day fever, dengue, beri-beri and polished rice, treatment of yaws by Salvarsan and Sir L Rogers's introduction of emetin in amoebic dysentery.

Another feature is the separation of blackwater fever from malaria and the insistence on its being a still unsolved problem and the probability of its being a disease *sui generis*.

We note the horrible and mediæval term *Sinensis* is still retained for the otherwise excellent chapter on heatstroke, etc. *Pellagra* comes in for a fuller treatment. The possible identity of 7-day fever with dengue is ignored and the protean character of dengue appears to be insufficiently emphasised. The cholera chapter is scarcely up to the standard of the book, the cause and view of cholera spread is ignored, but Roger's hypertonic solution is described. The dysentery chapter was always good and is now revised and up-to-date, while amoebic dysentery is amply illustrated, the even more common bacillary dysentery is not neglected.

The chapter on spine is good, but the subject of spine and allied complaints is one that calls for special research. There is a very complete chapter on liver abscess and the one on leprosy could scarcely be beaten.

The chapter on filariasis is revised and very complete and admirably illustrated. Indeed, all the parasite chapters are admirably done. A useful and concise appendix on the more common parasitic protozoa ends the book.

We have always welcomed the successive editions of this book and have no hesitation in again recommending this most useful and most compact manual to medical men and to students and to congratulate Sir P. Manson on the continued success of the book.

Manual of Anatomy—By A. M. BUCHANAN
Second Impression London Baillière, Tindall & Cox Price, 21s net

THIS is the second impression of Dr Buchanan's Manual of Anatomy, which though only published a few years ago has been so successful as to need a second edition.

In this the second impression the author has been able to reply to criticisms on the first and to correct several minor mistakes. The great feature of the book is that it adheres to the old anatomical nomenclature, which has been departed from in many other books on anatomy published for the use of the student.

It is agreed that while the Basle nomenclature has the merit of being an international one, yet it has many defects and the Latin names of many parts are by no means a pleasure to the student, nor in themselves things of beauty. Lt-Col Milne in a recent issue of this *Gazette* has discussed this subject. The present volume, however, gives in an appendix a list of the most important changes in the nomenclature.

Dr Buchanan in the work before us gives not only a manual of practical anatomy but also a text-book of systematic anatomy.

The work is beautifully and amply illustrated and will be found very satisfactory for students to whom we can cordially recommend it.

A Manual of Surgical Anatomy.—By C. WHITTAKER, F.R.C.S. (Edin.) Second Edition. 1914, Revised Edinburgh. Faads Livingstone Price, 6s

THIS is an eminently practical and useful manual of the most important aspect of anatomy, viz., surgical. It is emphatically a book for students, but will be found of much use to surgeons. It is well and clearly printed and admirably illustrated. The second edition has been well revised and enlarged.

Extraction of Teeth—By F. COLESMAN, L.R.C.P., L.D.S. Crown 8vo Price, 3s 6d London H. K. Lewis

THIS is the second edition of a book which will be found useful not only to the medical student, but to the medical practitioner.

The new edition differs materially from the first and is in every way an improvement. The chapters on anaesthetics are well done and will be read with interest. The chapter on difficulties and complications is especially good and useful. We can certainly recommend the little book.

Pharmacology, Clinical and Experimental—
Butterworth & Co, India, Limited, Calcutta

THIS book, written by Meyer and Gottlieb, professors of pharmacology at Vienna and Heidelberg, respectively, has been translated into English by Halsey, professor of pharmacology and clinical medicine at Tulane. It deals with "scientific drug therapy" and confines itself to that portion of pharmacology which should aid the physician in practising his profession. Medicinal substances are dealt with from a physician's point of view, and are divided into two classes—(1) organotropic (those influencing organs or their functions) and (2) etiopathic (those acting on the causative agents of disease). Organotropic pharmacological actions are described separately for each organ or functional system thus, there is one chapter on the pharmacology of the eye, another on the pharmacology of digestion, another on the pharmacology of the blood, another on the pharmacology of the circulation, another on the pharmacology of inflammation. Etiopathic pharmacological agents include quinine (malaria), salicylic acid (rheumatic fever), antitoxins, etc. The final chapter deals with factors influencing pharmacological reactions (*e.g.*, solubility, concentration in the blood, immunity, idiosyncrasy and anaphylaxis) and with the relationship that should exist between the hospital ward and the laboratory. In the discussion on the latter point, it is stated that the experienced physician may be a good therapeutist just as an experienced peasant may be a good farmer, but that advances in agriculture (*e.g.*, artificial fertilizing agents), are only very exceptionally made without the aid of theoretical knowledge and that for this reason alone, not to speak of others, theoretical knowledge is absolutely indispensable for practical therapeutics.

As is to be expected in a book prepared by specialists in two such famous medical centres as Vienna and Heidelberg, the subject-matter is well and, usually, fully dealt with, constitutional formulæ are given where such could be considered useful, and a bibliography completes every section in each chapter. The translator has interpolated comments or additions where he thought these desirable.

The use of strichnine in disturbances of the circulation is said to be a practice much more common in other countries than in Germany. In England and America a direct favourable action on the tone of the heart muscle is attributed to strichnine. The translator, however, correctly notes that many careful clinicians have lost faith in this drug as a means of improving the circulation in infectious diseases. There can be no doubt that the use of strichnine (so long the sheet-anchor in pneumonia) in diseases where the heart muscle is already labouring under the action of circulating toxins is quite unjustifiable, theoretically, experimentally and clinically.

Under quinine administration, the authors make no reference to hypodermic, intramuscular or intravenous injections, but the translator states that in refractory or pernicious cases quinine should be injected intramuscularly in the form of the soluble acid hydrochloride salt. The translator is evidently unaware of the conclusions arrived at, regarding quinine administration, by his fellow-countrymen in the Panama Canal zone.

The following are obvious misprints—'naphol' for naphthol on page 521, 'area nut' for areca nut on page 523, and 'anus precatoris' for anus praecatorius on page 160. Of course, there are numerous examples of American spelling and expression—color, obstipants (drugs which cause constipation), etc. The word *practicing* occurs in the preface we do not know if this is a misprint or an example of American spelling.

The authors have succeeded in their aim of producing a groundwork of scientific medical treatment. The book can be recommended to senior students, to medical men engaged in post-graduate study and to those physicians who desire to practise their profession in a rational and scientific manner. The price of the English edition, published by Lippincott, is 25/- net, it is well printed and illustrated, and has a full and valuable index.

Communicable Diseases—Laws and Regulations Public Health Bulletin No. 62, Government Printing Office, Washington, 1914

THIS is a valuable and complete summary and analysis of the law and regulations against communicable diseases in force in the various States of U.S.A. It is compiled by Asst

Surgeon-General J. W. Keir, and M. A. A. Moll

It is a very complete account of these various laws. It first discusses the duties of Federal State and local authorities, the duty of physicians and of citizens. Then comes long sections—the Federal Laws, the State Laws, on quarantine placarding, removal of patients, hospitals, disinfection, expenses, funds, disease carriers, foods, milk, railroad sanitation, school sanitation, jails, factories. The book is a most valuable one for reference and should be in the library of every sanitary or health department.

Clinical Side Room Methods—By A. F. HEWAT, M.B. Edinburgh E & S Livingstone (5th Ed.), 1914

THERE are many little books of this sort, but we think few, if any, will be found superior to the one by Dr. Hewat, now in its fifth edition. It is small, handy and cheap as well as full of information and account. Of its 200 pages, 125 are devoted to the urine, and in fact this portion of the book is practically a revision of the fourth edition of Husbands' well-known book on the urine. The other chapters concern themselves with, blood, sputum, pus, gastric contents and faeces, and will be found practical and useful.

The little book is an excellent one and should continue to prove useful to the student, and also to the practitioner.

SPECIAL ARTICLE

REPORT OF THE GENERAL HOSPITAL, MADRAS

As usual the report of this large hospital is one of great interest. In spite of the proposals in hand for a new hospital considerable sums have been spent in 1913 on many minor improvements.

No less than 53,235 patients (of which 6,229 were Europeans), were treated during the year and the average daily sick amounted to 384, while there is a total accommodation of 500 beds, 244 for surgical and 237 being reserved for medical cases, the remaining 19 for either class of case.

We propose now to make liberal extracts from the report, which is signed by Major H. Kirkpatrick, the then acting senior medical officer.

"Operations."—The total number of operations performed on inpatients was 2,147 and on outpatients 4,684, showing an increase of 15 and 1,053 respectively over that of the previous year. The increase in the number of out patient operations is remarkable. I would again draw attention to the fact that the department is understaffed.

The number of operations for the last three years among the in patients are—

Years.	Number	Percentage of mortality
1911	2,031 4.53
1912	.. .	2,132 6.00
1913	2,147 6.47

The percentage of mortality to number of operations actually performed during the year is slightly over that of last year.

Details of the most important and interesting operations performed by the different medical officers, also given in their professional reports.

Classes and Sexes—In and out patients treated during the year show an all round increase except Indian in-patients which is less by 691 than the previous year, the surgical in-patients were less by 356 and the medical 335.

Epidemics.—This year was fortunate in not having any epidemic prevalent in virulent form.

Enteric fevers—There were in all 107 cases treated in this hospital out of which 70 were among Europeans. This shows an increase of 50 per cent over that of last year. The death rate however was on the whole small being 7.47 per cent which is not high, considering that many patients come to hospital in the third week of the disease with marked tympanites, having enjoyed an unrestricted diet at their own houses.

There were in all ten cases of small pox treated, six among Indians and four among non-Indians. One Indian male died, two were cured and the remaining seven were either transferred to Krishnampet Hospital and Egmore Hospital or discharged, relieved. There were no outbreaks in the in-patients.

It should be noted that the lack of a properly equipped Infectious Hospital is very apparent. Under the present circumstances it is impossible to drive away many cases of infectious disease that come to this hospital, yet their admission entails considerable difficulty in nursing respects and this hospital is not suited for such cases.

Training of Medical Students—Two hundred and seventeen students of all grades against 204 last year attended the hospital for clinical instruction.

Post-Collegiate class—Fourteen Sub Assistant Surgeons were attached to the hospital to undergo a post-collegiate course for 6 months from 1st June to 1st October 1913. Clinical instruction was imparted to them in the wards and they were instructed in the method of performing *post mortem* examination by the Pathologist during that period."

Major F. F. Elwes, C.I.E., I.M.S., writes the report of the work of the wards of the first Physician, from which we make the following extract—

There is again a marked increase in the number of cases of malaria, 160 being admitted in 1913 as against 107 in 1912. Enteric fever has also been more prevalent, 40 cases being admitted in 1913 as against 23 in 1912. Admission for pulmonary tuberculosis have risen from 57 in 1912 to 75 in 1913.

Emetine in amoebic dysentery and hepatitis—Sir L. Rogers's treatment of amoebic dysentery by hypodermic injections of Emetine Hydrochloride has met with almost invariable success. Emetine however does not appear to be so effective in the treatment of amoebic dysentery in children as in adults, but even amongst adults there are occasional failures as evidenced by the following case—

A S., European, aged 35 years, admitted January 9th, 1913, with typical symptoms of amoebic dysentery though amoeba were not actually found in the stools. Emetine Hydrochloride injected hypodermically on January 10th, 11th and 12th without benefit. A stock dysenteric bacillary vaccine was then commenced on January 13th and improvement followed. The patient was discharged against advice, but at his own urgent request, on January 17th. He was again admitted on February 16th with symptoms suggestive of abscess of the liver. Emetine Hydrochloride Gr 1 was injected on February 17th, 18th and 19th with no benefit. The liver was explored on February 21st but no abscess found. On March 3rd however an abscess was found evacuated and drained in the usual manner. The patient died on March 14th and Major H. Kirkpatrick, I.M.S., Pathologist to the Hospital, reports "The walls of the abscess cavity were crowded with amoebae."

Salvarsan and Filariasis—A young adult Indian of the west coast was admitted into hospital for fever, and a specimen of his blood taken at night was found to be swarming with microfilariae. Salvarsan was injected at night (about 11.30 P.M.), intravenously, the blood examined in hour later, and again on several nights subsequently, microfilariae were present on every occasion in approximately as great numbers as before injection with Salvarsan.

Black water fever—W. II., European, aged 43 years, admitted August 20th, 1913, suffering from black water fever of two days' duration. Urine scanty, almost black in colour, showed a mass of debris microscopically. Spectroscope showed haemoglobin band. On the 23rd, as the patient had not passed urine for nearly 24 hours, I feared that suppession of urine due to haemoglobin blocking of the kidney tubules would occur and therefore decided to give an intravenous infusion, but as Sir L. Rogers considers that so called normal saline solution is in reality hypotonic, it was decided to use Rogers's isotonic saline solution (Na Cl G1. 90 Cr Cl2 G1.4) in order to avoid the possibility of increasing the haemolysis already existing. Two pints of Rogers's isotonic saline solution were infused into a vein of fore arm, and ten hours later 12 ozs of almost clear urine was drawn off. The urine although darker than normal was entirely different from the almost black urine previously passed and it retained this character until the patient died a day or two later from exhaustion. The infusion of Rogers's isotonic saline solution apparently had a marked effect in averting the threatened haemoglobin blocking without increasing the haemolysis.

Ionic medication—Several cases of sciatica and neuralgia have been treated by ionic medication with, on the whole, disappointing results, though one case of severe trigeminal neuralgia in a European, aged 50 years, was very markedly and rapidly relieved by this method, a 2% Sodium Salicylate Solution being used.

Capt J. W. Illius, I.M.S., reported on the work of the wards of the Second Physician—

Pulmonary Tuberculosis—Treatment with Bacillary Emulsion.—Following the system of Major Webster, I.M.S., patients with pulmonary tuberculosis were first rendered afebrile by the use of a vaccine such as that of staphylococcus, pneumococcus, or streptococcus and by iodoform injections.

Tubercle bacillary emulsion was then given about once a week for so long as there was no fever, in doses gradually increased from 1/100,000 mgm to 1 mgm. Of the above, 5 patients received a full course, 17 patients received a partial course. In all improvement and increase in weight took place especially in those taking a full course.

One case of tubercular glands of the neck was treated on similar lines and discharged from hospital cured.

Kala-Azar—A European ex-soldier, aged 44, employed in Madras since 1911 and living in Royaputram

Past history—Has been in India 22 years (served in South Africa 1900, in Punjab, 1901-02 and in 1908), was stationed at St Thomas' Mount in 1908, where he developed attacks of fever which lasted one or two days

In May 1894 he developed an abscess on liver which appears to have burst into the stomach or smaller intestines and discharged much of its contents which were vomited. The abscess was drained by operation through the chest wall

In 1911 suffered from dengue and sunstroke and dysentery

In 1912 suffered from muscular rheumatism

From March to September 1913 was on sick leave for debility and fainting fits

On admission he said that since 24th October 1913, he has had fever and ague, shivering and sweating every night. He complained of general weakness. He had pain in the left side and in spleen for fourteen days

On examination complexion was sallow. Spleen was tender and enlarged four fingers' breadth below costal margin. There is pain there on coughing. The liver is tender in the epigastrium. Base of right lung showed diminished breath sounds. The temperature rose daily to 100° and later to 102° and 103°.

From 24th November 1913 he commenced to have two rigors with fever in the 24 hours, the spleen became very tender, friction sounds over it from perisplenitis were heard, crepitations were heard in the base of the left lung. The blood on two occasions was examined for malta fever, with negative result. The blood examination persistently showed leucopenia. The fever now showed sharp daily rises to 102, 103 and 104, resembling those met in pyæmia.

Hepatitis being present emetine was injected repeatedly without effect

28th November 1913—Kala-azar infection in his blood was found

3rd December 1913—Patient was discharged to his home

Acute yellow atrophy of liver—A Eurasian male, aged 16, was said to be weak minded. Admitted on 14th September 1913 for marked jaundice. Temperature 100° F. He was very drowsy and would not answer questions. He slept for the most part of first 24 hours during which he vomited the nourishment given. He woke up feeling better and less drowsy. Temperature became normal. The urine contained bile. The bowels had not opened since admission, jaundice had become deeper. On the evening of second day he became noisy and delirious. Temperature rose to 102° F. The liver on percussion was found to be somewhat small. He then became unconscious, and died on the evening of the fourth day.

An extract from the Post mortem notes by Major Kirkpatrick, I M S—Body of a fairly nourished young man. Intense jaundice. Numerous petechial and ecchymotic hemorrhages in serous and mucous membranes. Serous cavities contain bile-stained fluid. Liver small and shrunken, soft and flabby, very dark and mottled. Weight 25 oz. Gall bladder empty. Intestines pale, yellow faeces, mucous membrane tinged with bile throughout. No patches of inflammation. Right kidney is swollen and bulges through capsule. The cortex is very opaque and yellowish, vessels obscured, medulla is dark. The calyces contain some turbid urine. The whole is soft. Weight—Right kidney, 4½ oz., left kidney, 4 oz. The viscera were sent to the Chemical Examiner for examination. No phosphorous or arsenic or mercury was detected in any of them. Microscopic sections of kidney and liver were made. That of the liver

was difficult to recognise as being derived from the liver, the normal arrangement of cells being replaced by a loose collection of cells, among which sections of bile ducts were observed. The section of the kidney showed marked congestion, the secreting cells of the tubules had become disorganised, many single cells were seen free in the lumen of the tubules.

We quote the following extracts from the report of Captain Skinner, I M S—

Malaria.—Amorphous quinine alkaloid was used in some cases. Five grains were given once a day with uniformly satisfactory results. I have only had a short experience of this remedy, but judging from the temperature charts and blood examinations it seems that the effect of 5 grains is equivalent to that of 15 grains of quinine sulphate, also given once a day. None of the patients complained of headache or tinnitus.

Major Miller, I M S, the Chemical Examiner kindly analysed a sample which he found to consist of the following—

Magnesium carbonate	...	per cent	68 440
Quinine	"		5 620
Quinidine	"		2 660
Cinchonine	"		1 780
Cinchonidine	"		23 440
Other alkaloids	"		5 920
Vegetable matter	"		1 140
			100 000

Pyrexia of uncertain origin.—One remarkable case was admitted last August. Unfortunately the notes have been lost but briefly, the case looked like one of dengue at first sight, except for the absence of the pain. The temperature was like an inverted tertian malaria chart, touching normal for four hours every third day, and had a remission of 1 degree in the middle of its crest. It rose abruptly with a slight rigor, and fell by crisis with much sweating. The blood showed a polynuclear leucocytosis. No malaria parasites were seen. A staphylococcus was cultivated from the blood. Except for a few rhonchi in the lungs, and injected conjunctivæ there were no other symptoms. The fever lasted 14 days after admission.

As anticipated, quinine had no effect on the temperature. About the tenth day after admission, I received a vaccine of the staphylococcus from the King Institute of Preventive Medicine, on the injection of which the temperature fell to normal, and no further symptoms occurred. The staphylococcus was not identified, and I am not certain that the fall of temperature was due to the vaccine.

The reports from the Surgical Waids are too statistical and less detailed than is desirable, and we quote the following from the short report by Major Niblock, I M S—

Major Amputations and Disarticulations (27 cases)—22 cured, 4 died, 1 remaining. One of the cases was a disarticulation through the hip for septic osteomyelitis of the femur, the result of an old compound comminuted fracture. Another case was an inter ilio abdominal amputation for sarcoma of the ilium. The patient gave a history of 8 months' illness and on admission there was a lump in the right iliac region which was tender. The lymphatic glands in the right groin were enlarged. The thigh was kept flexed. The patient was kept under observation for some time when he left hospital. After some days he came back. An exploratory operation was then done and a small piece of the tumour was sent to the Professor of Pathology who reported it to be a sarcoma. The growth had then extended almost to the middle

line and an inter ilio abdominal amputation had to be done. Much difficulty was encountered on account of the peritoneum being adherent to the tumour. The size of the tumour also was a great obstacle in the way of ligature of the iliac vessels. In spite of every precaution taken there was great shock during the operation. The pulse improved somewhat after operation, but the patient again got into a condition of a marked shock and died about two hours after operation.

It may be worth while to mention that seven cases of Mycetoma of different varieties were treated. Invariably the operation performed was Stephen Smith's disarticulation through the knee.

Major T H Symonds, I.M.S., gives the following table of work done in Second Surgeon's Wards --

DISEASE	Total number operated	Cured	Relieved	Discharged otherwise	Died	Remaining
Hernia--						
Inguinal strangulated	4	3			1	
Umbilical do	1				1	
Femoral do	1				1	
Umbilical hernia, radical cure	1	1				
Congenital hernia	2	2				
Reducible inguinal hernia, radical cure	3	2				1
Infantile hernia and hydrocele of cord	3	3				
Ventral hernia	1	1				
Laprotomy--						
Gonorrhœal peritonitis	1				1	
Malignant disease of pylorus	1				1	
Intestinal obstruction	2	1			1	
Enteroptosis	1		1			
Gumma liver	1			1		
Chronic peritonitis	1			1		
Tubercular peritonitis	1			1		
Ruptured liver	1				1	
Gastro raphy for gun shot wound, stomach	1				1	
Gastro Jejunostomy--						
(a) For pyloric ob- struction (1) Inflam- matory	4	4				
(2) Carci- noma	2		1		1	
(b) Duodenal ulcer	1	1				
Ilio sigmoidostomy for faecal fistula	1		1			
Appendicitis—Appen- dicular abscess	6	5				1
Ovarian cyst	4	4				
Hepatic abscess	1					
Excision of rectum for carcinoma	1	1				
Suprapubic cystotomy for vesical calculus	2	2				
Suprapubic encysted	1	1				
Litholapaxy	1					
Curetting of uterus for retained pro- ducts of conception	2	1				
Elephantiasis of clito- ris and labia	2	2				
Excision of lower jaw for carcinoma	7	4	2			
Breast adenoma No carcinoma	2	2				
Removal of F.B from bronchus	10	4			6	
Removal of F.B from larynx	1				1	
Fracture by plating, wiring etc	8	6	1			1
Sequestrotomy	15	7	6			
Mastoid disease	5	5				2
Arthroplasty	1			1		

Tuberculosis of bones and joints—Of 27 cases admitted, 18 were suffering from spinal caries (Pott's Disease). The average stay in hospital was only 53 days, and as this includes one of 12 months and one of six months, it is obvious that treatment is rarely persisted in long enough. It is satisfactory however to be able to report two cures without deformity, in this disease. One, an adult, admitted with spinal caries, lower dorsal region, and lumbar abscess, was discharged cured after a stay of 12 months in hospital. The other patient a child, after a short stay in hospital was treated as an out patient, as the parents were able to carry out instructions. This was also a case of disease in the dorsal lumbar region with abscess, and after a total treatment of ten months was allowed to walk with a spinal support. At the present date both patients are keeping perfectly well. Whitman's gaspere splint has been found to be much the most convenient method of treating these patients in this country. It is easily made by any blacksmith, is comfortable and easily managed by the nurse.

We quote the following interesting note from Capt E W C Bradfield's report on Third Surgeon's Ward —

Arthroplasty—This case illustrates the possibilities of this operation. The patient was admitted into the female ward for ankylosis of the knee following gonorrhœal arthritis. The affected knee was fixed at an angle of 35 degrees, and the lower end of the femur was partially dislocated forwards on the tibia. There were no signs of any active inflammation but no weight could be borne on the limb. Since the limb could not be straightened on account of the dislocation and contraction of the tendons, an operation for arthroplasty was performed. A long anterior incision was made extending three inches above and two inches below the patella. Two small transverse incisions were made at the lower extremity, to enable a triangular flap to be dissected back on either side. The inferior portion of the tubercle of the tibia was then chiselled off and dissected upwards with the ligamentum patella. The patella was fixed by long adhesions to the articular surface of the femur. These bones were separated and insertion of the vastus on either side cut, enabling the patella to be wrapped in saline gauze till the end of the operation. The tibia and femur between which there was also long union, were also separated, and about 1 inch excised from the end of each bone. In performing this part of the operation, the bone was gauged or chiselled away and an endeavour made to construct two surfaces as nearly as possible like the normal tibia-femur articulation including the formation of an intercondylar fossa and eminence. A large quadrangular flap was now dissected up consisting of vastus internus muscle of fat, based below. This flap was now brought between the two bones, and sewn with silver wire into the soft tissues surrounding the false joint. To prevent future ankylosis with the patella, that bone was now completely twisted so that the anterior surface, with prepatellar bursa formed its articular surface. The vastus tendon of either side was then sutured to the patella, the tubercle of the tibia fastened by a peg and the wound sewn up. The wound healed by first intention, and the condition of the limb at present, four months after operation, is as follows. The patient can bend her leg to an angle of 55 degrees and can straighten it without pain. There is good power of extension of the knee. It is difficult to make the patient walk as she states there is no necessity for her to do so. She complains of some pain on walking and this due to slight lateral movement which is possible in the new knee and muscular strain due to 2½ inches shortening in the limb. The pain and power of walking have improved with the use of a supporting bandage and a thick shoe, and the patient professes to be very pleased with the result of the operation.

The report is one of great interest to physicians and surgeons. Again we say why cannot the other big hospitals follow the good example set by Madras and by Buima General Hospital and let other medical men see the good work which is being done.

Correspondence

ITINERATING DISPENSARIES.

To the Editor of "THE INDIAN MEDICAL GAZETTE"

SIR,—In your issue for May of this year Lt Col Drake Blockman, I M S, gives a description of his exceedingly practical and compact arrangements for the transport of the *impedimenta* of an "itinerating dispensary". He precedes this by the statement, "it would be interesting to ascertain the origin of these institutions," for, though he had "for many years organized and curied one about [with him] almost every cold weather," he is inclined to think "the credit for initiating this excellent method rests with Christian Missionaries."

In the Madras Govt Order, 2310L, dated 7th December, 1886, L & M para 11, it is stated "the efforts made by Dr King to distribute medicines amongst the ryots which were noticed by Govt in reviewing the Report for 1886-87, appeared to have been continued with good results." This refers to a system of sale of medicines to ryots through heads of villages, instituted on my advice by the District Board, Kurnool. These men were furnished with a copy of a pamphlet in the vernacular giving simple directions as to cholera, bowel affections, round worms, fevers, snake bites, etc., and the use of quinine both for curative and prophylactic purposes was inculcated. There was a brisk demand for chlorodyne, santonine and quinine. Many years afterwards I found I had been preceded in issue of quinine for prophylactic purposes by Mr Wedderburn, Collector of Coimbatore, who, in 1867, arranged for gratuitous issue of quinine pills for this purpose.

In the absence of railways, tours in my old District of Kurnool lasted for many weeks at a time, and applicants for relief at my camp became so numerous as to outstrip private means, and the assiduous help of my wife in "clerking" and dispensing, hence, a formal application to the District Board for a special Hospital Assistant with drugs, equipment and transport. As a sequel there grew at Head Quarters a District Medical Store. This supplied "on loan" emergent indents from all hospitals in the district, despatched drugs for sale to ryots, and formed the District Board's Reserve Store" for disinfectants and drugs during epidemics. On tour, opportunities for surgery grew scarce, petty operations were attended to in camp, others were directed to assemble on certain dates at the nearest dispensary I had to inspect, whilst major operations that could wait were sent to head quarters. Experience showed the possession of a good midwifery instrument case an essential part of equipment. Trusting nursing eye cases to hired coolies at dispensaries was not always desirable, four cataract operations were allowed to wash their eyes with cows' urine, by way of hastening the cure!

From 1886 to 1890 the subject of itinerating dispensaries attracted the complimentary attention of the Madras Government from time to time in their Local Fund Board Administration Reviews, and, in their Order No 26L dated 15th March, 1889, they stated "Dr King's efforts in this direction are worthy of imitation by other District Surgeons." The subject was therefore taken up by other District Boards and, in my Annual Report as Sanitary Commissioner for Madras, for 1893, I stated as follows—

"Most District Boards have arranged to provide District Sanitary Officers with itinerating subordinates staffs to enable them to prescribe for villagers at points visited. The effect of the arrangement is beneficial not only in respect to medical treatment (with which this office has no concern), but also in bringing sanitary officers face to face with the diseases peculiar to the neighbourhoods visited and enabling them to gauge, in a manner otherwise impossible, the habits of people." But in November 1893 the Government of Madras issued an order requiring more energy in adoption of the method by certain Boards. Thereupon, the then Surgeon General with the Government of Madras reported that, "with the exception of three Medical Officers, all District Surgeons were unanimous in their opinion that the scheme

could not work satisfactorily, or be of much use to the people." The Madras Government accepted this advice but, in doing so added "it has at the same time no doubt that motives of humanity and professional zeal would always lead them [District Surgeons] to do what they can for the relief of cases of sickness which they come across during their tours." Thus the method was abolished in the Madras Presidency. It is possible my brother officers' objections were based on the fact that, in most districts, permanent dispensaries had already been formed at frequent intervals.

It will thus be seen that whilst it is quite possible, as suggested by Col Drake Blockman, Christian Missionaries have been pioneers in this work, as it is one of humanity (although I know of no instance in point) it is to the Madras Government that the "credit" of perceiving that my method, as applied to a single district, was suitable for wide extension is due, and to Col Manifold, C B, of the eventual working of a fully organized system on a large scale.

In thus trying your space, I have "an axe to grind." Itinerating dispensaries are humane in their intention and work, but the same might be said of fixed dispensaries at suitable intervals, as lately pleaded by Major Stokes, I M S. Speaking from personal executive work, both with the itinerating dispensaries system and executive sanitary staffs in rural areas, I say it is *impossible that the former can suitably substitute the latter*. The real value of an itinerating dispensary, beyond humane medical relief in cases where brief treatment is of utility, is in its educative effect on the officer in charge as to the habits and environments of the people, and junior medical officers, in my opinion, on first joining for duty in India would learn more of the people and the country they are to serve in, by six months' service on such duty than in a couple of years with a regiment.

I am, Sir,
Yours faithfully,
HATCH END, MIDDLESEX, } W G KING,
17th July, 1914 } COL, I M S (retd)

CASE OF ECHIS TOXÆMIA, ECHIS ONE FOOT TWO INCHES LONG DEATH IN 12 HOURS

To the Editor of "THE INDIAN MEDICAL GAZETTE"

SIR,—I have lately received from Mr Bami Parshad, B Sc, Zoological Laboratory, Lahore, a snake for identification, with the report that a native had succumbed to the effects of its bite. The specimen proved to be an *Echis carinata*, one foot two inches in length. A native about 38 years of age was bitten on the 18th June in the jungle, just above the ankle. A companion captured and killed the snake. Mr Bami Parshad saw the man about 7 hours after the bite, and was informed that he had already had haemorrhages from the nose and mouth. The man was unconscious, and cyanosed. Refusing hospital treatment, his relatives submitted him to the operations of a native medicine man, and he died 12 hours after the casualty. The brevity of the interval between the bite and the death is remarkable, and makes the case worth placing on record.

Yours, etc.,
F WALL,
MAJOR, I M S

ALMORA,
July 1914

QUINOIDINE IN SOLUTION

To the Editor of "THE INDIAN MEDICAL GAZETTE"

SIR—Will you be good enough to publish in the next *Indian Medical Gazette* instructions for putting into solution for dispensary purposes (so as to make a dose of gr. iv) a pound of Quinoidine. There are no instructions issued on the pound tins issued from the Juvenile Jail at Alipur. For convenience it would be well to print with it directions for dissolving a pound of cinchona alkaloids, and residual alkaloids.

Yours, etc.,
C S MEAD

FARIDPUR
July 7th, 1914

Reply to Dr Mead's Query

Quinoidine can be dissolved in sulphuric acid like ordinary quinine but it is unwise to attempt to do so. The drug is an amorphous residual alkaloid, depending largely for its efficiency on its physical, non crystalline properties. To put this substance into solution with an acid is naturally to

cause a change in the physical constitution and to convert some of the pure alkaloid or alkaloids into salts

Also, and this is an important point, the solution with sulphuric acid is very nasty indeed

Quinidine should be prescribed in tablet form, or as freshly made pills

The tablets each containing 2 grs or 1 gr can be obtained from the Juvenile Jail, Alipore, at Rs 4 per pound—the same rate as the crude drug

The physical characteristics of Quinidine vary with the place of manufacture. That from the Indian gardens is generally semifluid and treacle like in consistency, that of English manufacture is much more solid, whilst that sent out by Merck is quite hard and can be powdered

E E W

BIG STONES

To the Editor of "THE INDIAN MEDICAL GAZETTE"

SIR.—In your issue for July there is a note referring to Mr R J Willan's article in the January number of the *British Journal of Surgery* where he quotes a list of records of vesical calculi removed by Lithotripsy.

The list is headed by "Milton of Cane" with a stone of 12 ozs.

It may interest your readers to know that this is not the largest of Milton's stones published.

In 1902 I read a paper before the First International Congress of Medicine in Egypt on "Lithotripsy for Large Stones" when I was able to record Lithotripsy on 84 stones of 50 grammes and upwards done by my brother and myself, of which the largest, which was shown, weighed when dry 452 grammes or almost exactly 1lb (454 grammes)

MOOPENAAD, }
S. WYNAAD, }
July 18th, 1914 } Yours faithfully,
F MILTON

WEIGHT OF VESICAL STONES

To the Editor of "THE INDIAN MEDICAL GAZETTE"

SIR.—With reference to your article in the *Indian Medical Gazette* of July regarding size of stones extracted through the natural passage, by litholapaxy, I desire to forward particulars of a stone whose fragments weighed 14 ounces, and which I removed by litholapaxy when I was Civil Surgeon of Shahpur in 1909.

I would have published the case at the time, but I was under the impression that stones very much larger (up to 20 ounces) had been extracted and though I thought 14 ounces large, I didn't consider it worthy of report. On seeing your article, I wrote to the clerk of the Civil Surgeon's office, Shahpur, for full particulars of the case which he gave me from the Operation Register. I attach his letter in original. The patient was a strong Muhammadan male, aged 36 years with a history of stone trouble for four or five years. On sounding him, a very large stone was felt in the bladder. On bimanual examination, a large smooth stone was felt between the finger in the rectum, and fingers above the pubis. There did not appear to be any second stone. The urethra was capacious, and on slitting the meatus, easily admitted a No 18 Weiss Lithotrile.

The stone fragments were weighed in my presence. The after history was uneventful, the patient leaving the hospital in 7 days quite well.

Yours faithfully,
J E SWAN,
MAJOR, I M S,
Civil Surgeon, Rawal Pindi

SIR.—In obedience to your order I beg to give below particulars of the stone operations as are given in the operation register. Bed, head ticket and history of the patient do not exist.

Yearly No 680 Date of admission, 11th September 1909
Indoor register No 331 Name, Allah Din, age 36 years, class and sex, M M Disease, Calculus Vesical Nature of operation, Litholapaxy Name and rank of operator, Captain J G G Swan, I M S

Date of operation, 13th September 1909 Result of operation, cured 20th September 1909 Weight of stone, 14 ounces Time occupied, 3 hours Quantity of chloroform used, 3 ounces Conscious of your favours and always at service

Gratefully yours,
DEWAN CHAND,
Shahpur
17th July, 1914 }

ANESTHETICS IN HOT CLIMATES

To the Editor of "THE INDIAN MEDICAL GAZETTE"

SIR.—As the largest as well as one of the oldest manufacturers of ether in Great Britain, we have followed with considerable interest the recent correspondence in your journal, under the above heading. One or two of the statements made by Major Hooton, in his letter published in your June issue, are not quite accurate.

In the first place, Major Hooton states that the extra cost of using ether, as compared with chloroform, can be got over by substituting methyl ether, which is very much cheaper than the ordinary anesthetic ether. Now methyl ether, i.e., the product obtained by the action of sulphuric acid on methyl alcohol, has no commercial value, so far as we are aware, and is certainly not used as an anesthetic at Guy's Hospital or any other hospital in this country at the present time. Major Hooton is doubtless referring to ether which is freely sold in this country, under the rather loose title of "methylated ether," i.e., ethyl ether, manufactured from duty free ethyl alcohol, denatured with small quantities of methyl alcohol. There are various grades of this methylated ether and the highest and most expensive is one that is now very generally sold in this country under the title of "Ether Purif 0.720 from Methylated Spirit." When properly prepared this ether can only be distinguished with the greatest difficulty from the B.P. ether, i.e., ether manufactured from duty paid ethyl alcohol. We take it that Major Hooton refers to this B.P. ether, when he talks of "ordinary anesthetic ether," and it may interest him to hear that so far as our experience goes, the proportions in which the two qualities are used for anesthesia in this country at the present time are not less than 40 to 1 in favour of the product made from methylated spirit. The latter is in use not only in Guy's Hospital, but also at the London, St Thomas's, St Bartholomew's, St George's and, in fact, practically all the large hospitals in this country, to the almost total exclusion of the B.P. quality. It has been purchased for some years past by the Indian Medical Stores Department in large quantities, and we have no doubt that it is eventually used for anesthesia, although we have no definite information on that point. Eminent anesthetists appear to be agreed that there is no distinguishable difference between the two qualities. Dr Dudley Burton, for example, in his standard work on anesthetics writes that "rectified ether prepared from methylated spirit, when properly made is the most satisfactory preparation for use as an anesthetic." Dr Bellamy Gardner in "Surgical Anesthesia" states that "there seems to be little chemical difference in the effect produced by the inhalation of the ether prepared by the best makers from methylated spirit and that from ethyl alcohol." Dr R J Pobjoy Williams in his "Practical Guide to the Administration of Anesthetics" states that "methylated ether, as procured from reliable chemists is, however, now so well prepared that in their results there is practically no difference between the two." Hewitt & Robinson state—

"Both writers use methylated ether and they are convinced that, when properly prepared, its action and after effects are indistinguishable from those prepared from dutiable spirit."

In conclusion, we should like to state that the ether in use at Guy's Hospital at the present moment is supplied by ourselves and sold under the title of "Ether Purif 0.720, from methylated spirit" at a price practically 20% less than that mentioned by Major Hooton.

We are, Dear Sir,
Yours faithfully,
MAY & BAKER, LIMITED,

THE TREATMENT OF DYSENTERY.

To the Editor of "THE INDIAN MEDICAL GAZETTE"

SIR.—I suppose my experience of dysentery is an unusual one, but of the many hundreds of cases I have had to treat I have only twice had to resort to ipecacuanha. At first I used to constantly find certain severe cases did not seem to improve under the Mag Sulph treatment. In fact, they seemed to get slightly worse. I noticed in these cases that on palpation of the left iliac fossa that the iliac colon could be felt in severe spasm. I then tried stopping ill treatment for one day, giving 30 minims camphorodyne at night and then starting Mag Sulph (31 every hour) from the next morning. I found in every case these severe cases at once made rapid recovery. My routine since then has been to give Mag Sulph (.1 every hour) for 3 days. If the condition has not materially improved by this time, I resort to rest for one day, camphorodyne at night and then resume treatment the next day. Under this routine I have in only two cases failed to get rid of all blood and mucus in under the week. In these two

cases there was marked improvement, but the mucus and slight diarrhoea continued. This rapidly ceased with 2 or 3 60 gr doses of ipecacuanha (preceded by 30 gr chloral). I think the microscopic examination of the stools helps very little. I have never found amoebae, not even in the two cases which were cured by ipecacuanha. So I think a negative result as far as amoebae are concerned is worthless.

I can't help feeling that a large number of dysenteries are diagnosed as amoebic because they do not improve with Mag Sulph but would quickly improve under the above methods. I tried emetin when I first came to Meerut as I was told the cases of dysentery here required it, but I have found they all, so far, get well, quite well with saline.

While in England last summer I was told by the Resident Medical Officer at the Colchester Asylum that dysentery was very rare there and took a long time to cure. I suggested the Mag Sulph treatment. The M.O. said he had tried it but found it no use. I came then and tried myself. I found the cases were much severer than the average case in India, and that 3 days' Mag Sulph treatment did not improve the condition. I then tried the effect of one day's rest with chlorodyne or tinct opii at night (full dose) and recommenced Mag Sulph treatment next day. I found in every case very rapid improvement took place and all cases were completely convalescent in under a week.

My own opinion is that when the colon is very acutely inflamed or perhaps from some local ulcer, that severe spasm takes place so that complete flushing of the large intestines is prevented.

Yours, etc.,

R F HEBBERT, M.B., F.S. (Lond.),

CAPT., I.M.S.,

107th Pioneers.

INTERNAL USE OF RED IODIDE OF MERCURY IN ENLARGED MALARIAL SPLEEN

To the Editor of "THE INDIAN MEDICAL GAZETTE"

SIR.—Of all the counter irritants to the enlarged spleen Red Iodide stands first in reducing it, although there are other counter irritants of the same nature but of inferior value in these cases. In my opinion, Red Iodide acts not by its irritant action in these cases, but by absorption it produces certain changes in the system which produce increased leucocytosis and thus it effects the cure.

Bearing this view in my mind, I have been using this drug internally with marked success in several cases for the last two years. It reduces the spleen and improves the health of the patients. I have never seen any bad results from its administration. If it proves equally efficacious in other hands as it did in my hands, its use will make a considerable reduction in the expenses of the dispensary and at the same time increase the comfort of the patient.

I use this drug alone and only internally in the following way—

Red Iodide of Mercury	gr. 1/20
Pot Iodide	gr. 11
Aqua	dl. III

After two weeks I increase the dose to gr. 1/16 per dose.

On taking the blood counts, I have found that it increases leucocytosis. The earliest test seen it increased on the 10th day when the leucocyte count rose from 1,500 to 2,500. The differential counts also show these changes. At first the large mono does not get decreased, but afterwards there is decrease of the large mono with increase of the polymorphous and small mono.

I have shown this treatment and the blood slides to the Superintendent of this school.

I may suggest that this drug may be tried in Kali Azai cases.

I am experimenting with it in healthy men to find whether it does increase the leucocytosis. I shall publish my results later on in these cases.

Yours, etc.,

C K DATT,

Asst Surgeon

I have seen one case shown me by Dr. Datta and the blood slides of it. The case has certainly done remarkably well and has gained weight. The blood count too has now become practically normal. I shall be interested to see the result of Assistant Surgeon Datta's further experiment.

(Sd.) A DENHAM WHITE,

CAPTAIN, I.M.S.,

Superintendent, Berry White Medical School,
Dibrugarh

ERUPTIONS COMPLICATING SUPERFICIAL WOUNDS

To the Editor of "THE INDIAN MEDICAL GAZETTE"

SIR.—It is not an uncommon experience of medical men to meet with a variety of generalised rashes in persons undergoing treatment for superficial wounds. These eruptions simulate very much drug eruptions, being most acute in the neighbourhood of the wound, and diminishing in intensity elsewhere. Patients such as these show clinical symptoms pointing to a very mild toxæmia, but the appearance of the rash makes us generally apprehensive that some acute sepsis has supervened, and may lead us to drastic measures which in my experience tend to increase the suffering of the patient, and prolong the treating period, both of the wound and the eruptions.

The second case that I saw of such an infection is typical. A Burman male, aged 30, had a fall from the staircase of his house, and had 3 abrasions about 1 inch square each on his right leg. He washed the part, bought 2 aunes worth of iodoform powder from a grocer's shop, and bandaged the wounds with a fairly clean cloth. On the 3rd day he came to the hospital with a very considerably swollen right leg and a angry flush round the abrasions. Immediately surrounding the abrasions were big blebs which had burst and left raw surfaces, these in turn were surrounded by smaller blebs, some partially burst and some intact. The blebs diminished in size to a pin point in the further end of the limb, and his whole body was also covered with the same minute spots. Temperature was 101°, pulse 94 per minute, nothing abnormal with his digestive system but there was very considerable oozing of a thin serous fluid from his leg, which had a bad odour about it. The absence of prostration of any of the severer signs of toxæmia, the comparatively slow pulse, the absence of any acute pain or tenderness about the part and the fact that the man could come walking into the hospital with a leg like this made me at once sure that it was a case of a mild malady, and the treatment mentioned hereafter being adopted he got cured in 5 days' time.

The following facts have been ascertained by me from examination of 14 patients suffering from similar affection that have since come under my observation most of them occurring when I was attached to the Civil Hospital, Moulmein—

(1) Smears taken from puncturing the unruptured blebs are almost always sterile.

(2) Smears from the scrapings of the original wound show a very mild infection of staphylococci being obtained as compared to the almost pure culture from septic wounds.

(3) Inoculation of agar from the blebs negative.

(4) Inoculation of agar from scraping of the wounds show a sparse growth of staphylococci (probably infection from the skin).

(5) Indigo is present in the urine.

(6) There is diminished coagulability of blood.

(7) Leucocytosis is absent or very slightly marked.

(8) Absence of rigor or bad headache, or any of the signs of acute septic infection.

(9) Fomentations invariably increased the suffering of the patient and the often these are applied, the worse is the condition of the eruptions.

(10) In 6 out of the above 14 cases, unsterilised iodoform was used for dressing the wounds prior to the appearance of the eruptions.

The first case that came under my observation was in Moulmein Civil Hospital where a Burman boy had simple fracture of the left radius, and a small superficial wound on the middle of the outer side of the same forearm. The arm was shaved and cleaned the fracture reduced and the arm splinted with a small dry dressing and sterile boric acid powder applied to the wound. (The patient came 6 hours after he had the injury, and there was no dressing on his wound.) The 2nd day was uneventful on the 3rd day temperature was 100°, the forearm was swollen the whole dressing soaked through, on removal of the bandage, the wound was found unhealthy looking and surrounded with blebs. I immediately put him on hot fomentations three times a day and to my disgust the whole forearm looked nastier the next day. The blebs had spread outwards, and those nearer the wound had burst there was a rash all over his body which examined by a lens, showed a vesicular character. I increased the number of fomentations and put him on the ordinary combination of ferric chloride, quinine and brandy with purgatives. After that all sorts of remedies were tried, varying from dry application of zinc oxide and acid borac to saline fomentations, and for fourteen days the ulcers made very little progress, but the patient displayed no grave symptoms of sepsis.

The analogy of the treatment of weeping eczema by lead made me at last resort to cold compresses of Lotus Plumbi subcretes to the whole arm, which was by this time almost completely raw, and the diminished coagulability of blood made me also try calcium chloride in gr. x doses three times a day. Within 3 days' time the patient was almost

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SERVICE NOTES

cured. It was feared that the absorption of lead from such a large surface might lead to lead poisoning, but nothing untoward happened.

As far as I know I have not found this treatment advised in text books, so with a hope that this may be of some use to medical practitioners, I venture to publish my experience. The last case that came under my observation was in Rangoon General Hospital, where a patient had Lane's plating for ununited simple fracture of the leg, and after the fracture was united, the plates were removed. A superficial ulcer was left behind and one morning on opening the dressing, such a condition as described above was found, but on prompt application of Goulard's lotion and calcium chloride tincture, the whole eruptions cleared up and no generalised rash occurred.

I have not been able to suggest the causative factor of this form of malady, but unsterilised iodoform has seemed a very general cause of the affection. Of course it requires fuller pathological investigation (for which we have not much chance in an outside station).

I sincerely thank my superior officers for permitting me to publish these cases.

Yours, etc.,
M. L. KUNDU, M.B. (Cal.),
Civil Asst. Surgeon

THERAPEUTIC NOTICES &c.

THE "P. D. & CO." CHOLERA TREATMENT OUTFIT
1914 PATTERN

THE "P. D. & Co." Cholera Treatment Outfit contains apparatus and medicaments as employed by Lieut Col Sir Leonard Rogers, I.M.S., in the treatment of cholera and infantile diarrhoea (see *Indian Medical Gazette*, November, 1909, April, 1912, and November, 1913, *British Medical Journal*, 1910, II, 835, and 1911, II, 631, 1342, and 1404).

The japanned metal case measures $14\frac{1}{2} \times 9\frac{1}{4} \times 5$ inches, and contains 1 pint Saline Infusion apparatus with silver stopcock canula, and a retractile canula with stopcock, Hypertonie Tablets, and Sodium Chloride Tablets for making saline infusion, Potassium Permanganate and Enteric Pills, Calcium Permanganate, bottles for Collodion and Rectified Spirit, Iodine Tubes (for making Tincture of Iodine), Ampoules of Adrenalin Chloride Solution and of Pituitin, Compressed Cyanide Gauze, Boile Lint, Absorbent Wool and Bandages, Emergency and Horsehair Sutures, Artery Forceps, Dressing Forceps, Scissors, Scalpel, Aneurism Needle, and an extra supply of Surgical Needles, a Metal Try for Sterilising purposes, Spirit Flask, and Spirit Lamp for use with the steriliser, also a metal cradle in which the saline infusion flask is carried in the case, and which, when placed beneath the steriliser, encloses the spirit lamp and protects the flame from draught. The instruments are carried on a metal tray in a metal case.

If desired, a Blood Gravity Test Outfit is included, which affords a convenient means of estimating the specific gravity of blood at the patient's bedside, of particular service in cases of cholera, infantile diarrhoea, etc. (See *Indian Medical Gazette*, April, 1912, p 129, *British Medical Journal*, 1911, II, 1312.)

The Blood Gravity Test Outfit consists of a japanned metal case (measurements, $5 \times 3\frac{1}{2} \times 3\frac{1}{2}$ in) containing fifteen $\frac{1}{2}$ ounce stoppered bottles of glycerine dilutions of varying specific gravities—from 1.042 to 1.070, at 80°F —also two pipettes, with directions for conducting the estimation.

VIROL Ltd., send us a copy of their very satisfactory Annual General Meeting. The Company pays a dividend of 12 p.c. and the report shows a marked development of their trade in the Colonies and in India. Dr E. Burnet has been appointed as Director of their Laboratories.

THE Hoffman La Roche Chemical Works, Ltd (7, Idol Lane, London, E.C.), send us specimens of their new organic Iodine compound called IODOSTARIN, a compound of Iodine with TARARIC Acid. It is stable and colourless, also tasteless. In these days of fashion in Iodine such a useful product is worthy of attention.

'LAXAMFL' presents 'Paroleine' combined with a base which renders it acceptable to those who find difficulty in the ingestion of liquid paraffins, and is of particular value in the treatment of the large group cases of constipation dependent upon deficiency of lubricating material in the bowel. It is well adapted to modify the consistency of dry, hardened faecal material, and to assist in its evacuation. It can be given to delicate patients.

'Laxamel' is issued by Burroughs Wellcome & Co., in glass pots.

This "Tabloid" Syrup (as issued by Messrs. Burroughs Wellcome & Co.) is a marvel of compactness and neatness—"Tabloid" bandages are also used.

MESSRS. HOTEL/MULLER & SCHMITZ (7, Colootolla street, Calcutta), are agents for Sutton's Syrup, a nerve tonic obtainable with or without *uric vomica*. The same firm are agents for the new preparations—Urodonal, Jubol, Suludine, etc.

Service Notes

AT THE long delay orders have come for raising the status of the Administrative Medical Officer in Bengal to that of a Surgeon General, which to ordinary people seemed the natural and inevitable result of the raising of Bengal to a Governorship. The pay is not increased, it remains Rs 2,500 per month. We heartily congratulate Surgeon-General Hussis on his promotion, he has had a very distinguished career in India, Civil Surgeon of Nagpur, Civil Surgeon of Simla, Professor of Materne Medicina, etc., at Calcutta, and for three years past I.G.C.H. He is an M.D. and F.R.C.P., and was given the C.S.I. at the time of the King's Durbar in 1911.

LIEUTENANT COLONEL F. J. DRURY, I.M.S., is promoted to rank of Colonel, with effect we presume, from the formation of the new Province of Bihar and Orissa on 1st April 1912. Colonel Drury had a distinguished career at Trinity College, Dublin, and has been for many years a prominent Civil Surgeon in Bengal, and Principal of the Medical College, Calcutta.

The delay in this case and in that of Surgeon General Hussis was due to the collection of information as to the total cedars of the two new Provinces formed so dramatically at the time of the King's visit. The despatch only went home in April last.

THE I.M.S. DINNER AT SIMLA

THE annual I.M.S. dinner which was held at the Club of the United Service Club, Simla, on July 24th, was for various reasons a function of more than ordinary interest.

In the first place, the Service had the honour of entertaining His Excellency Sir Beauchamp Duff, the Commander-in-Chief in India, Sir Reginald Craddock, Member of the Viceroy's Executive Council, in charge of the Home Department, Surgeon General Battie, Director of Medical Services, India and Colonel Scott, Military Secretary to His Excellency the Commander-in-Chief.

Secondly, it was noteworthy on account of the speeches made by Sir Pudsey Lukis and his guests, the tenor of which showed, on the one hand, the splendid manner in which the interests of the Service are safeguarded by the Director-General, and, on the other, the favourable nature of the attitude of the Government of India towards the Service. Finally, the speech of the Director of Medical Services clearly demonstrated that in Surgeon General Battie the military side of the Service possesses a chief who not only endeavours to promote the cordial relations existing between the two services, but is animated by a sincere desire to advance the interest of both the British and Indian Military Medical Services with the utmost impartiality.

His Excellency the Commander-in-Chief and the other guests were received on arrival by Sir Pudsey Lukis, and after each officer present had been introduced to His Excellency the company sat down to an excellent dinner, the arrangements for which was in the able hands of Lieutenant-Colonel J.W. Gould, I.M.S., the Honorary Secretary of the dinner.

After the loyal toast had been duly honoured, Colonel Hehir briefly proposed the toast of the "Indian Medical Service," to which Sir Pudsey Lukis replied in a speech of great interest in the course of which he stated that in spite of the views of a few pessimists he was convinced that good days were in store for the Service. He said that, in view of the recent increase in the cadre of the Bacteriological Department, the creation of the post of Director of the Pasteur Institute in Burma, the appointment of an Imperial Seiologist to the Government of India, the old bugbear regarding the restrictions placed on the normal development of the civil side of the Service must surely be laid to rest. He also hinted at a possible increase in the leave reserve, so that officers would be able to take more freely their well-earned leave.

Finally, as evidence of the attitude of Government towards the Service, he drew attention to the generous manner in which the Service had been treated in the recent bestowal of honours.

These facts, Sir Pardey added, were eloquent testimony—whom may read—of the appreciation by Government of good work and professional merit. But, in view of the misapprehensions that still exist on the subject, he expressed the hope that it would be found possible to publish the despatches which have passed between the Home Government and the Government of India on the subject.

Subsequently, Sir Pardey Lukis proposed in felicitous terms the toast of "The Guests," which was received with enthusiasm.

His Excellency Sir Beauchamp Duff in acknowledging the toast on behalf of himself, Colonel Scott and Captain Vernon, expressed the great pleasure it gave him to find on his return to India, after an absence of some years in England, the steady improvement that had taken place in the health of both British and Indian troops, a fact which he attributed to the practical application of scientific knowledge by the officers of the Indian Medical Service and by their colleagues of the Royal Army Medical Corps.

Sir Reginald Craddock replied in a long and humorous speech, in the course of which he stated that the despatches mentioned by Sir Pardey Lukis would be published in about a week's time.*

Surgeon General Battie responded in a brief speech in which he emphasized the cordial relations existing between the two Medical Services in India, and he concluded by stating it would always be his endeavour during his tenure of the post of Director of Medical Services in India to forward the interests of medical officers belonging to both the British and Indian services.

After dinner an adjournment was made to the billiard room where Colonel Scott, Captain Brown, Major Sumner, amongst others, "discoursed sweet music," and a cheery and enjoyable evening was brought to a close in the small hours of the morning with "Auld Lang Syne" sung in time honoured fashion.

The following were present at the dinner—

GUESTS

His Excellency General Sir Beauchamp Duff, G.C.B., K.C.S.I., A.D.C., etc.

The Hon'ble Sir Reginald Craddock, K.C.S.I.

Surgeon General W. Battie, V.C., C.B., C.M.G.

Colonel T. E. Scott, C.I.F., D.S.O.

Captain H. A. Vernon, A.D.C. to H. E. The Commander-in-Chief

I M S OFFICERS

Surgeon General the Hon'ble Sir Pardey Lukis, K.C.S.I., K.C.S.A.

Colonel P. Hehn

Colonel P. C. H. Stuckland

Lieutenant Colonels the Hon'ble C. MacTaggart, C.I.F., E. A. W. Hale, M. A. Keen, F. P. Maynard, P. W. O'Gorman, C. H. James, C.I.E., H. Austen Smith, J. Gould and T. A. Granger

Majors A. A. Gibbs, E. L. Perry, A. N. Fleming, G. Tate, W. R. Batty, A. E. Walter, E. L. Ward, A. W. Cook Young, F. W. Sumner, C. E. Southon, J. R. R. Tyrell, R. J. Bradley, S. R. Christophers, H. C. Brown, and H. M. H. Melhuish

Captains H. M. Brown, T. Norman White, R. A. Needham, C. A. Gill, S. G. S. Haughton, H. F. Hebbert, P. M. Rennie, M. A. Nicholson, A. S. Khan, G. R. Lynn, and C. Newton Davis

THE following Majors are promoted to be Lieutenant Colonels, I M S (Brevet Lieutenant Colonel) T. A. Granger, H. J. K. Bamfield, J. W. Giant, A. H. Moorhead, W. D. Hayward, D. E. Scott Moncrieff, from 28th July 1914, and S. Evans, A. Gwyther, J. A. Hamilton, J. H. McDonald, with effect from 29th July 1914.

Lieutenant Colonel W. E. Scott Moncrieff, who has just been promoted to be Lieutenant Colonel, retires from the service. He entered on 28th July 1894 and has been on long leave out of India since 19th November 1911.

THE following Captains are promoted to be Majors, I M S, with effect from 26th July 1914, on completion of 12 years' service, viz. W. C. Ross, H. Halliday, A. J. V. Betts, F. E. Wilson, B. B. Paymaster, H. Ross, J. Honest, L. Hirsch, D. S. A. O'Keefe, of the batch of 26th July 1902, and H. A. Broome, F. N. White, D. Heron, H. C. Keates, L. Reynolds, R. A. Needham, and J. Kirkwood, the last seven belonging to the batch of 31st January 1903, and these seven consequently have received accelerated promotion.

IT will be remembered that there are three batches of officers whose commissions date from the year 1902, viz., 26

officers dated 29th January 1902, 26 dated 26th July 1902, and 25 officers dated 1st September 1902.

Owing therefore to accelerated promotion we find (July Army List) 15 men, with first commissions dating from 26th July 1902, who have been Majors since 26th January 1914 (i.e., 6 months accelerated promotion), next come a list of 12 officers, who got their majority after full 12 years' service, then come 11 men of the batch of 1st September 1902, who rank as Majors, from 1st March 1914 (i.e., with 6 months' accelerated promotion), next come 9 men of the batch of 26th July 1902, who are now promoted Majors after full 12 years' service, and 7 men of the batch of 31st January 1903, who have received 6 months' promotion and are consequently placed over the remaining men of the batch of 1st September 1902.

OF the nine officers above mentioned as promoted to the rank of Lieutenant Colonel, the following, viz., Brevet Lieut Col T. A. Granger, Lieutenant Colonel Bamfield, A. H. Moorhead, and W. D. Hayward, belong to the batch with first commissions, dated 28th July 1894 and consequently received the usual promotion at completion of 20 years' service. Of the same batch four men had already been promoted to be Lieut Col at 19½ years' service. One officer who has completed 20 years' service does not appear in this list of promotions. The following Lieutenant Colonels, viz., A. Gwyther, J. A. Hamilton, and J. H. McDonald, received promotion also at 19½ years' service.

This shows the vital importance for younger men of endeavouring to qualify for accelerated promotion to the rank of Major, the new rule being promotion not at 20 years' service, but after 8 years' service in the rank of Major.

COLONEL HARRY BECHAM BRIGGS, Bombay Medical Service, retired, died in Edinburgh on 9th June 1914. He was born at Oxcombe on 25th July 1851, educated at King's College Hospital, London, took the L.S.A. and the M.R.C.S. in 1875, and the M.B., London, in 1876, and entered the I.M.S. as Surgeon on 30th September 1878. He was promoted to Surgeon Major on 30th September 1890, to Lieutenant Colonel on 30th September 1898, and two days later was placed on the selected list as a special promotion for good service in the Tirah Campaign of 1897-98. He became Colonel on 10th July 1905, and retired on 1st January 1909. He held the appointment of Civil Surgeon of Sholapur in 1880-83, and of Satara in 1884-85, in the latter year he was posted to the 12th Bombay Infantry, now the 112th Infantry in which he remained for many years. His war services were Burma 1885-87, medal with clasp, and North West Frontier of India, Tirah, 1897, when he was mentioned in despatches in the *London Gazette* of 5th April 1898, received a special promotion, as mentioned above, and gained another medal and clasp.

LIEUTENANT JOHN EDWARD SCUDAMORE, I.M.S., died of fever in the Ripon Hospital, Simla, on 7th June 1914. He was born on 11th March 1884, educated at the London Hospital, took the degrees of M.B., B.S., London, in 1909, and entered the I.M.S. on 29th July 1911. He was stationed at Mequant as specialist in Electrical science to the 7th Division, and was attacked by fever while marching from Mussoorie to Simla. The *Army List* assigns him no war service.

SURGEON GENERAL AYLMER MARTIN CROFTS, Bengal Medical Service, retired on attaining the age of sixty, from 25th May 1914. He was born on 24th May 1854, educated at Queen's College Cork, took the L.R.C.S. in 1876, and the L.R.C.P. in 1877 at Edinburgh, and entered the I.M.S. as Surgeon on 31st March 1877. He became Surgeon Major on 31st March 1889, Surgeon Lieutenant Colonel on 31st March 1897, was placed on the selected list on 10th April 1903, was promoted to Colonel on 15th October 1908, and to Surgeon General on 7th April 1911. Most of his military service was spent in the 10th Bengal Cavalry, Hodson's Horse. In 1889 he became Residency Surgeon of Gwalior, and also served for some time as tutor to the present Maharaja of that State. His list of war services is long, Afghanistan 1878-80, with the Khyber and Kandahar Field Forces, when he served in affairs with the Ghilzais in and near Jigdalak, and received the medal Egypt, 1882, actions of Kassassin and Tel el kebir, medal with clasp, and Khedive's bronze star. North West Frontier of India, Zhob Valley Campaign of 1884, and the China war of 1900, medal. He was rather unlucky in his promotion, having succeeded as Colonel another man of his own standing, Colonel J. G. Kellie, who retired after three years' service in the rank. He officiated as I.G.O.H. in Bengal in 1906, and is Director General in 1913. He received the C.I.E. on 24th May 1900, the Knight's Cross, first class, of the order of Philip the Magnanimous of Hesse in 1904 and was appointed Honorary Surgeon to the King on 2nd March 1913.

* See Current Topics above—ED., I.M.G.

THE request made by the Indian Princes that Surgeon General Crofts should supervise the fitting out of the Hospital ship given by the Princes is a further proof of the high opinion held of Surgeon General Crofts by the Chiefs of India among whom he served so long. He was in charge of the Hospital ship in China in 1900.

CAPTAIN JOHN HAY BURGESS, Indian Medical Service, died in the Eden Sanatorium, Darjeeling, of heart failure, after an operation on 10th June 1914. He was born on 10th January 1880, educated at St Mary's, took the M R C S, the L R C P, London, and the M B, London, in 1902, and subsequently the F R C S England, in 1905, and the M R C P, London, in 1911. He entered the I M S as Lieutenant on 31st August 1903, and became Captain on 31st August 1906. The Army List assigns him no war service. He was appointed Medical Officer of the 88th Carnatic Infantry on 11th March 1908, and on 2nd April 1912 Surgeon to Lord Curzon, the Governor of Bengal, and held that post at his death.

LIEUTENANT COLONEL JOSEPH GEORGE HULBERT, Bengal Medical Service, retired on 12th May 1914. He was born on 14th September 1867, educated at Cambridge and at Baits, took the B A, in 1888, the M A, M B, and B S of Cambridge in 1892, the M R O S and the L R C P, London, in 1891, and entered the I M S as Surgeon Lieutenant on 27th July 1892. He became Surgeon Captain on 27th July 1895, Major on 27th July 1904, and Lieutenant Colonel on 27th July 1912. He served on the North East Frontier of India in the Kachin Campaign of 1892-93, medal with clasp, on the North West Frontier of India in the Mohmand Campaign of 1897-98 medal with clasp, and in Tukai in 1897-98, in the operations in the Bara Valley from 7th to 14th December 1907, clasp. He was in civil employ in the United Provinces, where he had been for several years Civil Surgeon of Muttra but had been on leave at home since 12th November 1913.

On the arrival of Colonel J Cummin, V C, C B, C I E, I M S, on or about October 21st, it was announced that Colonel W R Edwards, C B, C M G, I M S, will proceed to Dera Ismail Khan, and assume the duties of A D M S, Derajat and Bannu Brigades.

THE July Army List shows 19 men on the selected list from the Bengal establishment not counting Lieutenant Colonel Dury, who is in a Colonel's appointment since 1st April 1912, and Colonel W R Edwards, C B, C M G, who has recently been promoted Colonel. This leaves two vacancies in the Bengal list. We note also that Lieutenant Colonel J Garvie is on the list from 2nd April 1914, Lieutenant Colonel G B Irvine, from 10th May 1914, and Lieutenant Colonel D M Davidson, who belongs to the batch of 1st October 1887, is dated as selected from 25th May 1914.

WE congratulate Major D McCoy, I M S, on leave, who obtained the gold medal at the M D Examination of Queen's University, Belfast.

THE rules governing permission from the King about the wearing of Foreign Orders or Decorations are revised and published in 1173 I C, dated Simla, 16th July 1914 (Foreign Department).

LIEUTENANT COLONEL C R PEARCE, M B, I M S, is appointed Director of the Burma Pasteur Institute.

LIEUTENANT COLONEL W B LANE, I M S, Inspector General of Prisons, Central Provinces, whose services have been placed by the Central Provinces Administration at the disposal of this Government, is appointed to officiate as Inspector General of Prisons, Burma, vice Lieutenant Colonel G J H Bell, M B, I M S, appointed to officiate as Inspector General of Civil Hospitals, Burma, or until further orders.

CAPTAIN S H MIDDLETON-WEST, I M S, is appointed to hold Civil Medical charge at Baksa Duar, with effect from the forenoon of the 24th June 1914, vice Captain C Newcomb, I M S.

THIRD CLASS MILITARY ASSISTANT SURGEON H C POWERS is appointed to do general duty at the Presidency General Hospital with effect from the afternoon of the 13th June 1914.

CAPTAIN W TARR, M D, F R C S (Edin), I M S, on return from leave is posted to Namar, C P, as Civil Surgeon.

CAPTAIN R A NI EDHAM, I M S, M B, is confirmed as Health Officer, Simla.

MAJOR J G G SWAN, I M S, took over charge of the Civil Surgeoncy of Rawal Pindi from Lieutenant Colonel A Coleman, I M S, on 1st July 1914.

LIFUTENANT COLONEL P ST C MORF, I M S, acts as a Civil Surgeon, 1st class during the absence on leave of Lieutenant Colonel Henry Smith, V H S, I M S.

ON return from leave Captain H Watts, M B, I M S, is posted to Betul, C P, as Civil Surgeon.

CAPTAIN W J FRASER, M B, F R C S, I M S, was granted three months' privilege leave, with effect from 29th July 1914.

ON return from leave Lieutenant Colonel D M Davidson, I M S, rejoins Lahore as Civil Surgeon.

WITH the approval of the Most Hon'ble the Secretary of State for India an exchange is sanctioned between Captain F R Copinger, M B, Indian Medical Service, and Captain J B Hananian F R C S I, Royal Army Medical Corps, with effect from the 15th July 1914.

WE much regret to have to record the accidental death of Lieutenant Colonel C Malcolm Moore, M D, I M S, from a shooting accident at Quetta.

Lieutenant Colonel Moore had a very distinguished career in Trinity College Dublin, where he held a classical scholarship. He entered the I M S, on 30th March 1889, and was promoted to the selected list of Lieutenant Colonels on 13th June 1913. He served in the North-Western Frontier Expedition of 1897-8, including the operations in the Bara and Bazu Valleys (medal and 2 clasps) and afterwards in China in 1900.

Lieutenant Colonel Malcolm Moore belonged to a well known Dublin family and was one of the most genial and kind hearted of men. He was the life and soul of every society he was in and his early death will be much regretted by many in Ireland and in India.

THE services of Captain W S McGillivray, M D, I M S, were placed temporarily at the disposal of the Government of Burma.

CAPTAIN W S MCGILLIVRAY, M D, I M S, whose services have been placed temporarily at the disposal of this Government, is appointed to be House Surgeon, Rangoon General Hospital, sub *pro tem*, in place of Dr Aung Tun, M B, Ch B (Edin).

DR AUNG TUN, M B, Ch B (Edin), is appointed to the Civil Medical charge of the Paypón District in place of Civil Assistant Surgeon, Maung Shwe Ge, transferred.

THE Governor General in Council is pleased to declare the following officer to be a gazetted officer —
Major W F Stowell Chief Superintendent of the office of the Director General, Indian Medical Service.

MAJOR C H BENSLEY, M R C S, L R C P, I M S, Superintendent, Central Jail, Nagpur, is appointed to officiate as Inspector General of Prisons, Central Provinces, during the absence of Lieutenant Colonel Lane, I M S, or until further orders.

MILITARY ASSISTANT SURGEON R T RODGERS, Superintendent, Central Jail, Raipur, is appointed to officiate as Major C H Bensley, M R C S, L R C P, I M S, or until further orders.

UNDER Section 6 of the Prisons Act, 1894, the Chief Commissioner is pleased to appoint Military Assistant Surgeon R T Rodgers, Officiating Superintendent, Central Jail, Nagpur, to the executive and medical charge of the Nagpur Central Jail.

MILITARY ASSISTANT SURGEON A D C PERDRIAU, Civil Surgeon, Yeotmal, is appointed to officiate as Superintendent, Central Jail, Raipur, during the absence of Military Assistant Surgeon R T Rodgers, or until further orders.

THE following quaintly worded notification is from the U P Gazette on 4th July last —
Major J N Walker, I M S, Civil Surgeon, studied from the 12th January to the 12th May 1914.

[SEPT., 1914]

CAPTAIN W F BRAYNE, I M S, was transferred on 16th June to be Civil Surgeon, Taunggyi Southern Shan States, and Captain H S Matson, I M S, went on leave.

THE following promotions are made subject to His Majesty's approval —

To be Surgeon General

Colonel Thomas Gruniger, C B, M D, vice Surgeon General A M Crofts, C I F, K H S, I M S, Bengal, retired. Dated the 25th May 1914.

To be Colonel

Lieutenant Colonel William Rice Edwards, C M G, M D, vice Colonel T Gruniger C B, M D, I M S, Bengal, promoted. Dated the 25th May 1914.

Colonel Edwards' tenure will reckon from the 25th May 1914.

To be Major

Captain Walter Scott Patton, M B. Dated the 26th January 1914.

Captain (and Brevet Major) Samuel Richard Christopher, M B. Dated the 1st March 1914.

THE following officers are appointed permanently to the Bacteriological Department, with effect from the 14th February 1914 —

- 1 Captain E C Hodgson, I M S
- 2 Captain W D H Stevenson, M B, I M S
- 3 Captain J Taylor, M D, I M S
- 4 Captain H W Acton, I M S
- 5 Captain J Monson, M B, I M S
- 6 Captain F W Orrell, M D, I M S
- 7 Captain J A Chinnickshank, M I I M S
- 8 Captain R E Wright, M B, I M S

THE following officers are appointed to the Bacteriological Department sub *pro tem*, with effect from the 14th February 1914 —

- Captain J H Horne, M B, I M S
Captain R Knowles, I M S
Captain H C Brown, M B, I M S

Captain R A Needham, M B, I M S, is confirmed in the appointment of Health Officer, Simla, with effect from the 14th February 1914.

LIEUTENANT COLONEL J L MACRAE, M B, I M S, Civil Surgeon of Coorg, is granted privilege leave for three months with furlough for one year in continuation, with effect from the 1st September 1914, or the subsequent date on which it is ruled of.

The Home Department Notification No 246, dated the 14th May 1914, is hereby cancelled.

MR M DURAI RAJ DAVID, M B, C M (Mad), is appointed as a Civil Assistant Surgeon in Burma, with effect from the 1st July 1913.

This department Notification No 226, dated the 16th July 1913, is hereby cancelled.

CAPTAIN R D SAIGOR, I M S, was granted by His Majesty's Secretary of State for India study leave from the 16th January 1914 to the 25th April 1914.

HIS Excellency the Governor of Bombay in Council is pleased to make the following appointments —

Captain J Smalley, M B, I M S, to act as Deputy Sanitary Commissioner for the Central Registration District in addition to his own duties as a temporary measure.

DR J F D'MILLO, L M & S D P H, D T M & H (Cantab), to act as Deputy Sanitary Commissioner for the Western Registration District.

LIEUTENANT COLONEL W G BELTS R A M C, to hold civil medical charge of Rurki in addition to his military duties, vice Lieutenant Colonel A W Dawson, I M S.

CAPTAIN P S MILLS, I M S, took over charge of the Ambala Jail from Lieutenant Colonel D T Lane, I M S, on 15th June.

CAPTAIN K S SINGH, I M S, was granted a month's privilege leave from 20th July 1914.

CAPTAIN N S SOPHI, I M S, is posted for duty in the Foreign Department in Alwar State.

THE services of Captain A A C McNeill, M B, I M S, were placed at the disposal of Bengal and he was posted to the Medical College.

In supersession of Notification No 3245/JI-302, dated the 18th June 1914, Captain R S Townsend, I M S, supervising medical officer, travelling dispensary, Alighur circle, privilege leave combined with furlough on medical certificate for a total period of six months, from the 19th June 1914.

CAPTAIN W L HARNETT, I M S, temporary Surgeon to His Excellency the Governor of Bengal, is confirmed in that appointment.

CAPTAIN M A RAHMAN, I M S, has been appointed a Specialist in diseases of the ear, throat and nose.

CAPTAIN L REYNOLDS, I M S, has been appointed a Specialist in the prevention of disease and in charge of the Brigade Laboratory, Dehra Dun.

CAPTAIN T H BONNAR, I M D, Civil Surgeon, Girgaum Hills, is allowed privilege leave for 28 days combined with leave in or out of India for five months and two days, under Articles 233, 260 and 606 (2) of the Civil Service Regulations and paragraph 435 of the Army Regulations India Volume I, with effect from the afternoon of the 8th July 1914.

MAJOR JAMES GOOD, M B, I M S, Medical Officer is transferred from the supernumerary list of the Rangoon Volunteer Rifle Corps, to the active list of the Mandalay Volunteer Rifle Corps, with effect from the 14th July 1914.

MANY of the above arrangements are or will be upset by the recall of Officers in Civil employ to Military duty—a call which is being rapidly and enthusiastically responded to. At time of writing it is not expedient to give any details known of the calls.

Notice

SCIENTIFIC Articles and Notes of interest to the Profession in India are solicited. Contributors of Original Articles will receive 25 Reprints gratis, if requested.

Communications on Editorial Matters, Articles, Letters and Books for Review should be addressed to THE EDITOR, *The Indian Medical Gazette*, c/o Messis Thacker, Spink & Co, Calcutta.

Communications for the Publishers relating to Subscriptions, Advertisements and Reprints should be addressed to THE PUBLISHERS, Messis Thacker, Spink & Co, Calcutta.

Annual Subscriptions to "The Indian Medical Gazette," Rs 12, including postage, in India Rs 14, including postage, abroad.

BOOKS, REPORTS, &c, RECEIVED —

Hewitt's Clinical Sidicrom Methods, 5th Ed E & S Livingstone 1s 10d
Johnston Liver, Venereal Action and Disease Bald Sons and Danielson 3s

Shorts The Newer Physiology Bristol J Wright & Sons, 5/- Report of Dufferin Fund for 1913

Communicable Diseases P H Bulletin Co, Washington British Journal of Surgery No 5 (July)

Shaw & LeFetra, Diseases of Children, Lippincott, and Butterworth & Co, Calcutta

Copper & Drew Induced Cell Reproduction on Amahi J Murray 5/- Fibrillae, Diabetics Baillière, Tindall & Cox 12s 6d

Murrell & Robertson Forensic Medicine (8th Ed) Baillière, Tindall & Cox Price 3s 6d

Underwood's Aids to Dental Anatomy Baillière, Tindall & Cox Price, 2s 6d

Rutherford's Ilio Cecal Valve H K Lewis 6/- DaCosta's Modern Surgery W B Saunders Co £1

Punjab Jail Administration Report Madras General Hospital Report

Lukis & Blackham's Hygiene, new Edition Indian Home Nursery, Blackham's Cell Reproduction (McFadden Researches) J Murray

Ilio Cecal Valve by Rutherford H K Lewis Younger's Insanity Baillière, Tindall & Cox

Blackham's First Aid Danoch Chinese Self taught E Marlborough & Co

LETTERS, COMMUNICATIONS, &c, RECEIVED FROM —

Lt Col F P Maynard I M S, Simla, Asst Surgeon de Penning, Quetta Major Oscarbeck Wright I M S, Agra Capt J B Nesfield, I M S, Banda Major E A O Mathews, I M S, Meerut, Capt Harland, I M S, Gantse, Tibet, Dr S Clarke, I M S, Kashmir, Dr Biggs, Krishnagar, Major Maddock, I M S, Ahmednagar, Lt Whitamore, I M S, Singapore, Lt Col C Milne, I M S, Mussoorie Capt G A Gill I M S, Lahore, Major G M Connor, I M S, Chirra, Major A G MacGillchrist, I M S, Calcutta, Sir P Lukis, Simla

Original Articles.

THE MEANING OF INSANITY *

BY THE LATE G F W EWENS,

LIEUT COLONEL, I M S,

Superintendent, Punjab Asylum, Lahore

By an insane person' is usually meant one suffering from a disordered mind or to slightly change the excellent definition given in Maudsley's *Pathology of Mind*, page 1, one in whom by disease affecting the brain there is such derangement of the functions of feeling, thought and will together or separately as to disable him from feeling, thinking and acting as do people of his own age, race and time, and as he himself was in the habit of doing before his illness. Unfortunately the legal conception of the same does not always correspond with the medical one, and this is a fact of great importance for as is well known an "insane" person is by reason of his insanity and the consequent loss of self-control which is such a prominent feature of that affection often so troublesome, annoying and even dangerous to others, and so likely to do himself an injury that it is allowed by law to place any such person certified as insane in an asylum—in other words, he can be deprived of his liberty—and also as a necessary consequence he is freed when in an insane condition from the responsibility and subsequent punishment for any of his acts which would be meted out to a sane individual committing the same. It is, therefore, for these reasons that all medical men are liable to be called on for a clear definition as to what constitutes insanity or to give a criterion that will clearly distinguish that condition from sanity and this can only be possible after one has formed a clear conception as to what is actually meant by mental disorder or insanity.

Now though most of us will agree in the present day that mental processes have their physical basis in the brain and are dependent on the healthiness and good nutrition of that organ for their proper working and that therefore disordered mentality, disordered mind, insanity, must of necessity be due to disease or malnutrition of it. Unfortunately in times gone by owing to the general belief, even when this was not explicitly stated that "mind" was something quite separate and independent of "body" it was tacitly taken for granted that a person of "unsound mind" was not necessarily suffering from a bodily disease at all and therefore insanity was practically re-

garded as something different from and outside the range of ordinary medicine—just as in India at the present day people so affected are regarded as having been bewitched—put under a spell or divinely inspired—anything in short rather than that they are ill. This popular belief, not confined to the laity it may be added, was still further strengthened by the fact that to the casual observers (and such observers were certainly casual in regard to anything but the affection of the mind) the sufferers did not present any of the characteristic symptoms of bodily disease—there was thought to be no rise of temperature, no pain no paralysis no affection of any bodily function, etc. But such belief, however, can be shown to be an error—the symptoms of bodily affection if carefully looked for are to be found and are indeed then obvious to any observer but they are overshadowed by the great affection of mind, and as the disease is one causing interference with the proper working of the brain such a preponderance is no more surprising than it is to have predominant gastric symptoms from an affection of the stomach. On the other hand, it must be clearly remembered, that any disease without exception also affects the mind as well as the body from the interdependence of all the organs one upon another. For very little experience will be required to convince you that any person suffering from what is usually styled a bodily disease is on account of that always incapacitated from thinking, feeling and acting as he would in health or as normal people do, and there is every gradation in this result between the slight mental incapacity or alteration produced by say a severe headache or indigestion and the profound disorder of an acute delirium often seen in a pneumonia or an exanthem in which latter conditions a person is as truly "insane" and mentally disordered even though one may hesitate to call them so for the time being as one with paranoia or dementia precoox except that we know then the "bodily" source of his alterations and are aware that it will only be of short duration and be rapidly relieved or will end fatally.

The inference is and of the truth of this any one who will carefully study in a hospital for mental diseases will be ultimately convinced of that every so-called insane person is suffering from one of a certain number of diseases (possibly they include several others that we have not yet succeeded in clinically differentiating) affecting chiefly the brain, and which are as much a part of general medicine as is say a nasal catarrh or pneumonia—the difference solely being that in ordinary what we were pleased to call bodily disease the "physical" symptoms are so very prominent as to mask those of the brain and its product the mind, while in "mental disorders" it is exactly the reverse—the symptoms of mind

[* As this paper in the press we learn with much regret of the sudden death of Lt Col Ewens at Lahore, from Angina pectoris. His death is a very great loss to the alienist department and will be deeply regretted by his many friends—(ED, I M G)]

disorder are all prominent, and we have hitherto disregarded and indeed overlooked those of the body which always accompany them. The most obvious borderland cases connecting these two series are in the fevers accompanied with delirium toxic liver diseases and some gross cerebral lesions, tumor, meningitis, etc., were we to be shown the mental symptoms of these alone and were as totally ignorant of their pathology or as uncertain of their duration and result as say we used to be of insanity—it would be obviously impossible to distinguish a sufferer from these from an insane.

The inherent prejudice on the subject will be clearly shown by the retort that may occur to many on this point—that these people are obviously ill and an insane is not—one can only reply with the true but not obvious statement that a person actually insane is ill—very ill with an acute exhausting malady, and that it is only by recognition of this fact, and it is extraordinary how it could possibly have been for so long overlooked that any proper treatment can be effected or an advance in the knowledge of these diseases be attained to.

Quite apart from the fact of its being undoubtedly the most difficult department of medicine the subject of mental disorders is enormously complicated and at present rendered unnecessarily obscure by its importance judicially—especially in India—and by the legal views as to it as well as practically by the failure so far to elucidate the pathology of the diseases causing it. For though it does not follow of course that because a person is declared "insane" he should be segregated in an asylum or even certified, there is still the possibility that almost all such people are potentially dangerous and troublesome to others. Still were one so to declare a patient "insane" whom a skilled observer believed was in the early stages of dementia puerorum, hebephrenia or general paralysis or paranoia, his decision might well be indignantly challenged by many. It is not an uncommon thing for example to hear it said that some one is suffering from general paralysis, but that he is not "insane" and indeed in the ordinary acceptation of the term this is true enough. The reality being of course that the legal conception of insanity takes cognisance only of or is only concerned with perhaps it would be better to say the disorder of the intellect, and the consequent incapacity or irresponsibility that this may occasion while from the physician's standpoint the all-important thing is a diagnosis and to him a patient may be suffering from a disease causing "insanity," whose symptoms may not be such as to warrant one giving a certificate that he is insane—the converse, it may be remarked does not hold—a person insane must of necessity be suffering from one or other of the affections here, to be enumerated as causing that condition

But in this as in other departments of medicine doubtless the labours of the large number of workers now engaged on its research will be ultimately rewarded, and the time will come when it will be sufficient for the physician to give a diagnosis of the malady—while the question of his capacity or the patient's irresponsibility for his acts will be left for others to decide upon.

As regards the several disorders making up "insanity" so far from being one disease with different manifestations—those causing it are many and varied.

(1) A person may from birth or shortly after be so deficient in intellect as to come under the category of the idiot, imbecile or feeble minded.

(2) Later in life he may become insane from an injury to the brain or from sunstroke or this condition may be caused by gross cerebral lesions such as tumor, abscess, softening and haemorrhage, disseminated sclerosis and bulbar palsy. Excluding these as far as we are aware at present in what is now called insanity a person will be found to be suffering from either

(3) General paralysis of the insane

(4) Or some diseases of more uncertain pathology those now distinguished being—

(i) Idiopathic (manic-depressive) insanity, mania and melancholia this group also including the so-called intermittent and periodic insanities

(ii) Toxic affections

(a) Extrinsic from Indian hemp, dhatura, cocaine, alcohol and the rare poisons lead, sulphur, chloral, belladonna, ether and mercury, some authorities would add opium though this is entirely contrary to the experience of the writer

(b) Intrinsic, the exhaustion and infection psychosis

(iii) The primary dementias, dementia puerorum and catatonia

(iv) The senile, abiotrophic and arteriosclerotic insanities

(v) Epilepsy

(vi) In association with disease of the thyroid myxoedema, cretinism, exophthalmic goitre)

(vii) In association with chorea

(viii) Paranoia

(ix) The psychasthenias imperative and obsessional ideas and impulsive insanity

Doubtless in these may be included other diseases which we have not yet succeeded in differentiating.

In some ways these diseases differ from those accepted as making up general medicine

(1) Whatever may be said as to the part mental shock prolonged worry, fright and exhaustion play in their causation, the fact remains that it is not everyone who can be made "insane." With the exception of cases of injury or sunstroke, it is only those who possess what is called a nervous diathesis who are liable, or reversing

the argument if you take any insane person and you can obtain a truthful family history (a very difficult thing to procure) you will find that his parents or predecessors or collaterals have had some member imbecile, insane or epileptic or who had suffered from various nervous diseases, cerebral tumor, apoplexy or softening, disseminated sclerosis, bulbar palsy, paralytic agitans, hysteria or chorea or migraine asthma, cerebral diplegia, infantile palsy or that the ancestry present examples of eccentricities or of one-sided genius, criminality or alcoholism, while a tubercular history is very common, and that with this is associated the fact that those affected (with insanity) usually show one or more stigmata of degeneration, deviation of stature, abnormality of limbs, skull, skin and hair, ears, eyes, palate, face and organs very easy of recognition and also commonly found on these persons suffering from the diseases above referred to

(2) Unlike the other diseases which make up what is termed general medicine those producing what we are pleased to term insanity are restricted to certain periods of life. It is almost unknown for instance for a child to be affected I have seen in India two or three young boys of 14 with acute mania but that is very rare and speaking generally puberty and adolescence is the earliest age at which a person is liable to any variety of insanity while an enormous section, namely, those suffering from dementia precox and its varieties is confined to that age and to a few almost ten years later—speaking generally few cases occur after that period until middle age at which period and at the menopause in women insanity is very common, and the incidence then falls again until old age at which it is so often seen and has such special varieties as to be elevated by some writers into a special affection—senile insanity. It must be owned, however, that each variety has a special proclivity for certain ages. The primary dementias are rarely seen after 40 one might say never after 35 even. The exhaustion psychoses the same, paranoia is almost restricted to well over mature adult life and middle age while, on the other hand, the idiopathic forms though usually first seen at adolescence occur throughout life. Myxoedema and exophthalmic goitre the same, though cretinism is naturally a disease of youth, while the toxic insanities and the psychasthenia may be met with in people at any time of life.

(3) Mental diseases have a wonderful capacity for recurrence in the "idiopathic" variety, this is a predominant characteristic and certain varieties, dementia precox, katatonia and paranoia are in our present state of knowledge incurable, but this, however, is also seen in other varieties of medicine.

(4) Twice as many single persons become insane as do married people, it is also frequent

among the widowed, and there is a surprisingly large amount of it among those unmarried at about middle age, a fact sometimes thought to indicate direct relation between celibacy and insanity. A very large proportion of Indian insanies have never been married.

These diseases have also certain symptoms unusual in other affections quite apart from these defects and alterations in judgment, reasoning, affection and will power which we erroneously supposed to be only seen in them. I refer to the presence of illusions, hallucinations and delusions—one may be perhaps excused from reminding the reader that an illusion is an erroneous interpretation of a sense impression, a person who believes that he sees a horse when it is only a shadow on the road, or who thinks a stick is bent that is held vertically in water has an illusion, while an hallucination is a sense impression occurring without any external stimulus. A man who believes that he sees a figure standing in an empty room or a light when the place is in darkness is suffering from an hallucination, any person may have an illusion and some people may have an hallucination but if "sane" they usually correct their false impression by the evidence of their senses. It is just this that the "insane" is incapable of doing or having done for him, nothing will convince him but that the light is there and the stick is bent, etc. Lastly, there are delusions—an "insane" belief entertained by a person which is obviously absurd and which the patient is incapable of being reasoned out of such as when a man declares to you that he has 3 feet and 3 hands, or that he is a god or a bird. As a delusion is not met with in any disease other than those enumerated as causing insanity its existence in any one is clear evidence of insanity, though it is by no means every insane person who shows one far from it.

One can scarcely avoid continuing the use of the word "insane" as a matter of convenience, though there are, as has been pointed out, so many diseases chiefly affecting the intellect and which comprise the total of what was formerly termed insanity, just as it is impossible practically in the present state of our clinical knowledge to avoid discussing the general characteristics of "insanity" common to the diseases comprising it.

Insanity is enormously less frequent in uncivilized countries than in these more highly developed—a very simple result of the care taken in these latter to preserve life even in the degenerate and neuropath and so ensure the diseases they are prone to being handed down to an increased number of descendants.

Quite apart from the fact of insanity being liable to transmission to the descendants for some unaccountable reason being regarded as a disgraceful occurrence in a family the chief

characteristics of mental diseases which in popular belief so strongly distinguish them from ordinary ailments are those striking and obvious features of them which so alter the individual sufferer and so profoundly affect the family and environment.

A person affected with one of the many diseases causing it is at once changed from what he was before—an important point to be remembered in diagnosis—and changed for the worse in appearance, dress, manner and behaviour—most are either noisy, boisterous, violent and restless or morose, self-willed, obstinate and unapproachable, and all are liable to be most troublesome and obnoxious even dangerous and at any rate anti-social—they think and act and speak differently from those about them and from their own previous habits—they are unable to maintain themselves much less those dependent on them, and in any case lose most of their former capacities and all regard for others, are callous, rude and often filthy in their habits—they stand alone—in every sense of the word, and seem to be most curiously affected in all the essential features that go to make up self-preservation.

A normal man eats when hungry, becomes fatigued after exertion and then sleeps and at any rate will not endanger his own life or that of others, but an insane's most prominent feature is that he will not eat—has to be forcibly fed often and usually does not appear to feel hungry—he does not sleep and after what seems superhuman exertions or days of wakefulness does not show any obvious signs of fatigue, and he has always to be carefully watched and guarded to prevent him by some rash act putting an end to his own existence or injuring that of other people. It is impossible to reason with him and the vast majority are filled with a view of their own opinion being above that of any others and are incapable of learning by experience.

At present when we come to discuss the actual causation or peruse the enormous records of statistics on the subject, one does not obtain any assured conviction and this is very easily explained. No attempt for instance, as far as I am aware, has ever been made to separate in giving the causes those of the individual diseases producing insanity which is instead treated here as a whole or rather the causes producing any variety are all massed together. The mere sequence or coincidence of some factor has been elevated to the rank of a causal agent, and the number of circumstances cited in this connection embracing as they do almost every event of life is strong evidence of the unreliability of the conclusions.

It is, however, almost certain that, for any ~~extreme~~ strain or stress to be efficient, this must affect a person afflicted with a congenitally "unstable or inefficient" nervous system, and that this hereditary influence direct collateral or

atavistic is absolutely essential—some members of such families even develop an exactly similar type of disease, and some of them again even at an exactly similar age to their parent though the appearance of insanity at an earlier age in each succeeding generation is the more frequent rule. But not only may the direct influence of direct heredity of mental disease appear to be the predisposing factor, but it would also seem that general malnutrition of the mothers (this accounting probably for the supposed influence in illegitimacy) illness and drunkenness at the time of conception may also be an important element. Drunkenness at conception, indeed, is strongly suspected capable of producing idiocy, it is said of the hydrocephalic type and tubercular disease on one or both sides in the parents is always potent—the union of a neuropathic with a person tubercular or with a tubercular history being almost certain to produce some insane members in the progeny.

The influence of a celibate life has been already alluded to, and in this particular one may remind the reader of the extraordinary frequency of dementia precox at the age of sexual development.

But when it comes to the actual exciting "exogenous" causes, while we may admit the undoubtedly action of drugs such as Indian hemp and alcohol it is not the same with worry, loss of relations or children, business anxieties, money losses, fright and nervous shocks, etc. religion or sexual excesses and masturbation and over-education given without any regard to their frequency in the same population, or as to whether they are coincident and an effect as they often are, of commencing insanity. For then we are on more than doubtful ground, and any one will be convinced of this when comparing the relation of their action in causation to each individual class of mental disease. Can any trained alienist honestly believe that worry or pecuniary loss, common enough unfortunately to everybody, can possibly cause insanity associated with chorea or goitre, or explain how in say three cases it can cause a manic-depressive insanity in one, a dementia precox in the second and a paranoia in the third?

On the other hand, if we take a list of the diseases, which, as far as we know at present, produce insanity and see what inferences as to their pathology can be deduced from the facts of clinical observation these do not lead us to accept the general list of causes usually given. We will take them in the order here given which has been so arranged purely for a matter of convenience.

(1) The causes of insanity following head injury need no discussion, their effect can only be one of loss or destruction of cerebral substance, entailing derangement of the intellect which is dependent on a due working of all parts of the cerebral cortex together for its maintenance.

The influence of sunstroke can only be of a similar nature even if the injury in this case is only histologically recognisable, clinically the results are indistinguishable. The effect is from cerebral lesions comes really under the same category than action, however, varying greatly with the site amount of actual involvement of brain tissue and very markedly at least in tumors or abscess with the rapidity of the growth and enlargement.

(2) General paralysis of the insane has been proved to be practically restricted to those previously affected with syphilis, but the belief of recent observers that some actual exciting cause bacterial or otherwise is also necessary is rendered more probable by the fact that there are several countries such as India, Arabia and in China where though syphilis is prevalent the disease is absent, and the few rare and doubtful cases hitherto reported from those places come always from seaports and large capitals where communication and infection from abroad is comparatively easy.*

(3) As regards the idiopathic manic-depressive insanities the fact that these are often of sudden onset and always show a marked leucocytic variation, while recovery is usually coincident with a hyperleucocytosis, and that these are the varieties of mental disease which often recover rapidly after some acute infection—that produces the same effect goes far to render the assumption that these are due to some form of bacterial invasion a very probable one.

(4) While the exhaustion psychosis though they also show a recovery coincident with an increase in the leucocyte count by then obviously direct causal relation to any form of exhaustion would lead one naturally to suppose their origin to be an autotoxin produced in the body, unlike the preceding they only relapse with the onset of any intercurrent malady.

(5) As regards the primary dementias, especially dementia precox, no definite conclusion can yet be come to—though a bacterial infection only capable of attacking those of strongly marked hereditary predisposition and possibly having some relation to the bodily changes at the commencement of sexual life may be suspected. They show unlike the manic-depressive variety no benefit from any infection causing a hyperleucocytosis.

(6) The senile insanities, when not due to organic brain disease, seem to bear a direct relation in their origin to the decay of the arterial system, and there is strong ground for believing the causal mechanism thus to be an autotoxin poisoning from degeneration of all the organs producing incomplete and perverted metabolism.

(7) Epileptic insanity can only be said to be in direct association (8) and dependence on that malady while that associated with disease of the thyroid and with chorea likewise do not admit of further explanation.

(9) True paranoia, slow in origin progressive and incurable, never showing blood change and not amenable to any known form of treatment, is not yet capable of pathological explanation, although the history usually given of marked sensitiveness seen from childhood and the anatomical differences in the cortex of the prefrontal lobe found by some observers would lead one to imagine it to be an instance of delayed imbecility or an abiotrophic change a constitutional anomaly rather than a disease." It is the only form (except No. 10) of acquired insanity not accompanied with "bodily" symptoms of disease.

(10) As regards the obsessions and psychasthenias it is only possible to refer to the views of Freud and his followers who would put their origin to the unconscious repression of mental processes thus giving them, as far as I understand, then teaching an entirely psychological explanation. This does not, however, it must be remembered in any way finally dispose of a material affection being the real basis of the malady. We are apt to forget that the only means of appreciating any external influence, even a so-called psychological one, is by perception through the senses, and if we believe that the results of these impressions form the material of mind it is no more inconceivable to believe that the organ of which this is the seat can be disturbed in its working in this manner than that the analogous condition of a disturbance of the stomach tissues and functions can be brought about by an ingestion of unsuitable food material.

Lastly, one difficulty many people have in regarding mental diseases is in their being unable to give an opinion on the case regarded as being on the borderland, or rather as most put it on knowing when to draw the line as to where sanity passes into insanity. The difficulty which is very real to some is the result partly of the old conception that insanity is one affection merely passing through different stages, etc., and of the manner in which it is so regarded from a legal standpoint. It will be found that the cases usually cited as presenting this difficulty are (1) moral imbecile people who from birth are not only deficient in a perception of right and wrong, but who are incapable of being taught such and in whom punishment is no deterrent—while in other respects they do not show any other disease of intellect. Such are instances of congenital mental deficiency and form a very well defined class and should properly be kept in perpetual confinement, for nothing will prevent them from committing any crime or act a passing desire may prompt

* See page 389 below.—ED

them to—with these of course are frequently confused a number of other cases—some obscure cases of cerebral abscess—epileptics—in whom the fits are not necessarily of severe character, high grade imbeciles, in whom no defect of intelligence is obvious on casual examination, and some few cases of recovery from previous mental disease in those in whom though apparently cured the only defect of intelligence left is a marked deficiency of self control and loss of all moral character these forming what is often spoken of as acquired moral insanity.

Apart from those in whom a criminal or anti-social act calls up the question of their sanity there are others who are so eccentric and peculiar as to be thought abnormal (1) Eccentricity is of two kinds as is well known, one in which the habits are a result of conviction and resolution and are carried out for a certain reason and maintained in the face often of opposition and personal discomfort in people who maintain themselves, and (2) the eccentricity of unbalanced intellect in people of neurotic heredity whose conduct is not actuated by other motives than the satisfaction of personal whims and caprice or of a vain display, and who are usually incapable of earning their own living or maintaining themselves much less those who are dependent on them. Such are really high grade imbeciles, but must be carefully distinguished by their history from similar cases seen in what can only be termed partial dementia after incomplete recovery from a previous attack of insanity, their intellect is always of a very low order contrasting markedly in this respect with the first variety who are always men of marked ability and reasoning power.

Almost all the other cases which may be cited as presenting this difficulty on diagnosis will be found to be instances of commencing mental disease of one form or another or cases of paranoia with a concealed delusion.

A COMPARISON BETWEEN THE MENTAL PROCESSES IN THE SANE AND IN THE INSANE

BY OWEN A R BERKELEY HILL, M.B., CH.B.,
CAPTAIN, I.M.S.

ONE of the most signal services rendered by the psychological, as opposed to the physiological, conception of insanity, has been the bringing about of a more precise understanding of the relationship that exists between the mental processes of the sane and those of the insane.

The tendency to regard all mental disorder as due to disease of the mind rather than of the brain may be said to date from Charcot's study of Hysteria, for it was he who first showed

conclusively that hysteria is a disease of the mind and not of the body.

From that time to the present day the opinion has gradually spread that many disorders of mentality can be explained satisfactorily without any reference to processes occurring in the brain by the employment of scientific law which involve psychological terms only. The most considerable additions and amplifications to Charcot's original observations have been made by Janet in Paris, and Freud in Vienna, and it is to the observations of the latter especially that we owe a number of entirely novel conceptions of the highest importance both as regards their validity and breadth of application.

The study therefore of mental phenomena from a purely psychological standpoint is rapidly bringing to light the fact that a very intimate and perfectly demonstrable connection exists between the mental processes which characterise insanity and those which we are accustomed to associate with the normal mind.

In other words, the absurdities, nationalities and delusions of lunatics are not the outcome of a disorderly chaos of mind obeying no laws, but merely differ from the mental manifestations of the sane in degree and in the mode of combination of the causes concerned in their production.

The most important step towards a psychological conception of insanity was made by Janet when he introduced the conception of the 'dissociation of consciousness'.

It would be entirely beyond the scope of this article to enter into any discussion of the validity or otherwise of this conception, so it must suffice to say that a very small amount of introspection is needed to realise that the normal mind frequently exhibits certain degrees of dissociation.

For example, it is a matter of common observation that an expert pianist can play a difficult piece of music perfectly correct, although his mind may be engaged with a complex train of ideas. Similarly, a skilled mechanic can play his craft and at the same time carry on a conversation on a topic entirely unconnected with his occupation.

In both cases the mind is in a state of dissociation, that is to say, one portion of it is working independently of the other. In the case of the musician, a part of his mind is occupied with the music he is playing and the remainder is engaged with a train of thoughts wholly unconnected with his occupation. So also with the mind of the craftsman, a portion of his mental processes is directed towards the work in hand, while the rest is involved in conversation.

When we turn to the realm of abnormal mentality we can find more striking illustrations of this phenomenon, as for instance in the so-called

"automatic writing" often observed in cases of hysteria

If, while deeply engaged in conversation with another, an hysteriac is induced to grasp a pencil it may be possible to get him to write replies to questions put to him by a third person, without at the same time causing any interruption to the conversation. In this case a dissociation has taken place but of a more intense nature than those described in the examples of the pianist and the mechanic.

In the hysteriac the field of consciousness is completely divided, and each portion is carrying on complicated mental processes, which are not only independent of each other, but totally unaware of each other's existence.

Now it is not difficult to see that a dissociation of consciousness may not only come into existence, but that it may persist and the dissociated portions continue to exist side by side.

This, of course, does actually occur, resulting in the production of what is termed "Double Personality".

The creation of a double personality may be regarded as the extreme limit to which the splitting of consciousness can go, so that below this limit there are many less pronounced states of dissociation, as for instance when there exists a split-off system of ideas. Such split-off systems of ideas then continue to live an independent existence exempted from all control of the rest of the personality.

This process finds many illustrations, and among them may be cited the phenomena termed "obsessions".

In the case of an ' obsession ' we are dealing with a dissociated system of ideas, differing from the type of dissociation that occurs in doubled personality in the fact that the split-off portion of consciousness is perceived by the personality as a whole. A further type of dissociation can be met with in cases which display hallucinations. Certain insanies constantly hear voices telling them that this or that is going to happen. In such cases the hallucinatory voice may be regarded as the mode in which the dissociated system announces its existence to the personality.

Similarly too with delusions. A patient may believe that he is a king or God and yet remain perfectly acquainted with his own family history. He may assure us that he is omnipotent and capable of creating a new universe, and yet the moment after he may ask plaintively to be allowed to leave the asylum, or beg for a small quantity of tobacco.

This startling tissue of contradictions seems at first sight inexplicable, but the key to the riddle is clear as soon as we realise that the patient's mind is in a state of dissociation.

The patient believes that he is God, and yet he is quite aware of facts which are totally contradic-

tory to that belief. His belief in the matter of his identity exists quite unaffected by the rest of his mind's content. It is conserved in a logic-tight compartment. Although the phenomena of delusions and hallucinations are so apparently bizarre, and so characteristically insane, this dissociation of the mind into "logic-tight" compartments is by no means to be met with only in an asylum.

The irrationality and imperviousness to reason which most lunatics display, may be constantly encountered in every-day life where it is most marked among politicians and sectarians.

To the mental phenomena which exhibit these peculiarities we nowadays apply the psychological term "complexes".

A complex may be said to be a system of emotionally-tinged ideas, and it may be conscious or it may be unconscious.

Thus, a "hobby" may be regarded as a type of conscious complex. A collector of stamps or a breeder of horses will be observed to have his flow of consciousness constantly affected by matters relating to stamps or horses respectively.

If the stamp collector, for instance, reads a newspaper it is certain that any reference to philately will arrest his attention sooner than it would arrest the attention of anyone who was indifferent to the subject. Similarly, the sight of a well-bred horse will rouse the interest of the horse-breeder with an intensity that could not occur in an individual who took no interest in horse-breeding.

Complexes may be of all sorts and kinds, the component ideas may be of every variety, the accompanying emotional tones pleasant or painful, very intense or comparatively weak (1).

One of the most powerful complexes is the love-complex. To a man in love for the first time the world appears, *sub specie amoris*. Every event that happens is coloured by his passion, and his whole environment is nothing but a setting for the dominating complex.

The subjective awareness of the existence of a complex is, however, by no means always present. It is possible for a complex to exert a pronounced influence upon consciousness, although the individual himself may be unaware of its action, that is to say, he may be altogether ignorant of the causes which are really determining his own mental processes.

To illustrate this point we may again refer to the party-politician. Thus, if a new measure is laid before him, his verdict will be largely determined, not by the absolute merits or demerits of the measure in question, but by the fact that it was introduced by his own or the opposing party. He may, nevertheless, honestly believe that he is actuated entirely by a dispassionate consideration of the logical pros and cons (2).

This attitude of mind is usually described in ordinary language as "party bias," but in the language of modern psychology we say that the politician is suffering from a "political complex."

Thus we may observe that not only is his attitude determined by a complex of whose existence he is unaware, but he believes his decision regarding the measure to be the outcome of a logical appreciation of the case. This process of self-deception, in which an individual conceals the real foundation of his thoughts by a series of purely adventitious props, is called in psychological parlance, "rationalisation."

Besides the property of a complex to exist consciously or unconsciously, it may also express itself directly or indirectly.

Examples of the way a complex expresses itself directly have already been given in the examples of the stamp collector and the horse-breeder.

The following serves as an illustration of the indirect expression of a complex. It is reported by Jung, and quoted by Hart (3).

A man walking with a friend in the neighbourhood of a country village suddenly expressed extreme irritation concerning the church bells, which happened to be pealing at the moment. He maintained that their tone was intrinsically unpleasant, their harmony ugly, and the total effect altogether disagreeable. The friend was astonished, for the bells in question were famous for their singular beauty. He endeavoured, therefore, to elucidate the real cause underlying his companion's attitude. Skilful questioning elicited the further remark that not only were the bells unpleasant, but that the clergyman of the church wrote extremely bad poetry. The causal complex was then apparent, for the man whose ears had been offended by the bells also wrote poetry, and in a recent criticism his work had been compared very unfavourably with that of the clergyman.

The rivalry-complex thus engendered had expressed itself indirectly by an unjustifiable denunciation of the innocent church bells. The direct expression would, of course, have been abuse of the clergyman himself or of his works. Thus it may be seen that the analysis made out the apparently incomprehensible reaction of the man towards the bells to be a natural resultant of perfectly definite antecedents.

In certain cases of insanity mechanisms of a similar type can be shewn to be responsible for the symptoms involved. In short, the symptoms are the indirect and distorted expressions of hidden complexes.

Now although a complex may exist in a mind it may all the same be totally out of harmony with it either from its intrinsically painful nature, or because it prompts to actions which are incompatible with the individual's general views and principles.

In such a case there arises a state of "conflict," a struggle between the complex and the personality. The result of this will be a condition involving emotional tension with accompanying indecision and paralysis of action. This state of affairs cannot last, so to solve the difficulty the "conflict" is subjected to treatment in any of the following ways—

(1) It may be preserved, and the opposing groups of ideas allowed to pursue their own course of development, each untroubled by its incongruity with the other.

This process, as it has been already observed, enables an insane woman who fancies herself a queen nevertheless to perform ordinary menial work with contentment.

(2) The significance of the incompatible forces of the two opposing systems of ideas is concealed by the mechanism of "rationalisation." A familiar example of this mechanism is to be found in the cases of individuals, otherwise of irreproachable honesty, who will cheat Government or a railway company with imperturbable equanimity. If they are taxed with the incongruity of their conduct and their principles, they will immediately produce a host of "rationalisations" to justify their actions.

The same condition of things exists in the case of the lunatic who attributes the absence of even a penny in his pocket, although he is a "millionaire," to an organised conspiracy to rob him of his wealth. (3) The "conflict" may be repressed. This process consists of banishing the complex out of consciousness, a method of obtaining peace of mind that is familiar to everyone. Indeed much of the "forgetting" which persons' experience is as much due to a deliberate exclusion of an offending memory as to a passive process.

Although the complex is denied entrance into the mind it is not by any means annihilated, and inasmuch as repression is a more drastic method of dealing with a conflict than methods (1) and (2), its disturbing effect upon the mind is proportionately greater.

Such a "repressed" complex continues to exist, and continues to find expression, although the expression is abnormal and indirect.

To illustrate this point the following diagram taken from Hart's admirable little book, "The Psychology of Insanity," will afford much help.

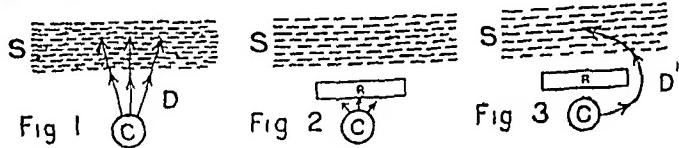


Fig 1 represents the normal action of a complex. S is the stream of consciousness, the succession of thoughts, emotions, and volitions which occupy the surface, as it were, of our minds. S corresponds in fact to the mind as it appears to

ordinary introspection C is a complex, and D represents the various ideas, etc., which the complex throws into the stream of consciousness so soon as it is stimulated.

Fig 2 represents the state of affairs which arises if the complex is subjected to repression. A resistance (R) is now opposed to the normal action of the complex so that the ideas belonging to the latter can no longer be thrown directly into the conscious stream in the manner shewn in Fig. 1.

Owing to the resistance (R) all the ideas belonging to the complex C will be absolutely cut off from the stream of consciousness, a condition resulting in localised loss of memory.

As a rule, the mode of repression is less drastic than this, so that the state of affairs is illustrated by Fig. 3. Here the repressed complex cannot affect consciousness in the normal direct manner, but it exerts an influence along the devious path D. The case cited above of the man who expressed irritation at the sound of certain church-bells, is a good illustration of this mechanism.

It should now be seen how this conception of the mechanism of repression can explain the genesis of many abnormal symptoms observable in the sphere of insanity.

The phenomena caused by the presence of a repressed complex will be of two kinds. They will be either (1) indirect expressions of the complex itself, or (2) phenomena due to the resistance which prevents the complex from obtaining its normal and direct expression. Both phenomena may, of course, occur together, although in one case the first may be more prominent, in another the second. For instance, the indirect expression of the suppressed "sex-complex" in elderly unmarried women is frequently seen in their abnormal interest in marriages, births, etc., or in their fondness for pet animals—cats, dogs, and so forth.

As a further aid to the "resistance" set over the complex a personal reaction in the opposite direction to that of the complex is not uncommonly observed to take place. The suppressed sex-complex of the elderly spinster exhibits an opposite reaction in the development of excessive prudishness.

In the sphere of insanity this phenomenon (a reaction in the opposite direction), is well illustrated by the following case quoted by Hart (4).

A patient was suffering from an incurable cancer. She was at first intensely depressed, tortured by the pain accompanying the disease, and filled with the gloomiest forebodings concerning the future of her husband and children. Suddenly she entirely changed and became abnormally joyous and elated. She maintained that she was perfectly well, and that the disease had been completely cured.

The psychological explanation of the case is obvious. The distressing conflict between the

hopeless facts and all the patients most cherished ambitions, actually seen in the first phase, had been solved by a process of repression. The facts were shut out from consciousness, and the resistance to them re-entitled was assisted by the development in consciousness of an abnormal gaiety and elation.

The same mechanism is at work in that form of joviality commonly known as "drunkard's humour," so characteristic a symptom of the chronic alcoholic.

Here we observe how the drunkard glosses over the consequences of his vice, the poverty and miseries of his wife and children with a habitual pleasantry or a *bon mot*.

Another beautiful illustration of the indirect expression of a repressed "guilt-complex," is in the so-called "washing mania," of which every asylum contains at least one example. The patient is for ever trying to remove the stain on his conscience by perpetually washing his hands, etc. The classical example is naturally Lady Macbeth.

"Out, out damned spot! What, will these hands ne'er be clean?"

Here's the smell of the blood still, all the perfumes of Arabia will not sweeten this little hand."

In daily life wit humour and cynicism are frequently used to conceal or divert painful memories. The consumption of opium, alcohol and other narcotics, may be and often is the outcome of an (unconscious) attempt to stiffen the repressive forces acting on a complex.

The assumption of a feverish activity, a habit-spasm, even stuttering, may all assist to help repress a complex.

In the sphere of insanity one sees a similar mode of reaction, only in a more advanced degree, in what is known as "talking past the point." The patient does not answer questions but makes totally irrelevant remarks, often grotesquely inappropriate, thus giving to his conversation a characteristic aspect of meaningless incoherence (5).

Similarly, mutism—the exact opposite of this—may be utilised to serve the same end. The patient preserves a complete silence to all questions, a silence which may last for months or even years.

Another very common and important method of repressing a complex is the employment of symbolism. We have already noticed how cats, dogs and other animals may symbolise children for the unmarried woman. Jung gives a dramatic example of symbolisation in the case of an old female lunatic who had never been heard to speak or exhibit the slightest interest in anything that went on around her. Year after year she sat in a huddled position, continuously moving

her arms and hands in a manner resembling the action of a cobbler engaged at his trade. When her history was investigated, it was found that as a young girl she had been engaged to be married and that the engagement had been suddenly broken off. This event had caused a great emotional shock from which she had passed into an insane state which persisted throughout the remainder of her life. It was further discovered that the faithless lover had been a shoemaker by trade (6).

Still another mechanism may be mentioned in the category of the adjuncts employed to assist in the repression of a complex and that is what is termed "Projection."

Hart (7) defines "Projection" as a peculiar reaction of the mind to the presence of a repressed complex in which the complex or its effect is regarded by the personality as belonging no longer to itself, but as the production of some other real or imaginary individual.

Thus, persons who possess some fault or deficiency of which they are ashamed are notoriously intolerant of the same fault or deficiency in others.

The mechanism of projection may be said to underlie most of the cases of delusional insanity.

For instance, in the delusions of insanity due to chronic alcoholism a man may charge his wife with infidelity, cruelty to his children, reckless expenditure, etc., while in reality he himself has been guilty of all these things.

So also in the delusions of persecution does the process of projection play a prominent part.

Women who have passed the prime of life without ever having experienced much attention at the hands of the opposite sex, frequently complain bitterly of embarrassing overtures on the part of some man. Such a woman may state that she lives in perpetual dread of seduction or rape.

This form of insanity is reached through a sequence of developments following a strong repression of a natural but thwarted sexual instinct. The first manifestation of this repressed sexuality will be generally an exaggerated prudery. For a time this prudery may suffice to maintain the supremacy of the repressing forces, but after a while additional aid is required to sustain the requisite peace of mind, and this is achieved by a reversal of the significance of the desires and their projection upon their own object. In certain cases the desires are projected on to a totally imaginary person or persons, and the victim of the repugnant complex will often invent an elaborate story peopled with non-existent characters in order to satisfy the demands of the projection-processes.

So strong may the feeling-tones become in these cases that, from the persons being at first

imaginary they may develop into what are for the patient realities i.e., hallucinations.

Thus at first the patient may hold to the idea that the persecutor is somewhere about, never actually seen but nevertheless certainly at hand. Later on, the feeling-tone of the idea becomes so intense that the hitherto mysterious individual suddenly appears and remains henceforth as real and defined as he had before been shadowy and obscure.

Only two more mechanisms commonly employed for the repression of mental conflict now remain for notice i.e., "Phantasy" and "Identification".

To many mortals the rebuffs and failures to achieve success are so keenly felt that peace of mind and consolation can only be attained by the construction of phantasies.

Most of us at one time or another have sought solace for the failure of an ambition in the real world by the creation of agreeable fancies and by so doing we may be said to have trodden a few steps along the path which leads to the asylum!

To the hypersensitive man or woman "day-dreaming" is a species of diam-drinking for the desire for it increases by giving way to it.

At first the individual may be no more than 'absent-minded' or 'self-absorbed'. Gradually he retires more and more from the world, he expresses no desires or ambitions, he needs no sympathy or companionship. As his self-made world becomes more and more to his own liking—for in it all his desires and ambitions are luxuriantly fulfilled—it becomes harder to call him back to the world of reality. The end comes at last. Alone in the same corner, day after day, week after week, year after year, he does nothing, he says nothing. His face is vacant and expressionless. He is oblivious of everybody and everything around him. He will receive the news of his mother's death with the same untroubled equanimity as he will the announcement that dinner is ready. He now lives entirely in a world of day-dreams. For him the facts of life have for evermore lost all their significance and interest.

In the second type the patient dwells in his imaginary world even more completely. The phantasies of his mind have acquired some sense of reality. He is the mighty emperor, the all-conquering general, the multi-millionaire.

For him the creations of an idle fancy have become actualities. To say that the lunatic "general," writing endless despatches to his victorious staff, is only a few places removed as regards his mental state from the kitchen-maid poring over her novel peopled with dukes and duchesses, or that the mental processes that lead the mad "multi-millionaire" to sit all day signing numberless cheques for incalculable sums at all

resemble those of the "gods" in the gallery watching a melodrama, may at first sight appear meaningless. Nevertheless, the fact remains that a close kinship exists between them. Everyone who has watched the gallery during a stirring melodrama is aware that the audience are living on the stage—always of course, in the part of the hero or heroine. Similarly the kitchen-maid achieves a luxuriant expression of her 'self-assertion' complex by picturing herself through the medium of her romantic novel as a bejewelled countess, surrounded by lackeys or driving to some gorgeous function in a motor-car of immense size capacity and speed.

It will now be seen that the apparent rationality of the lunatic loses a good deal of its significance as soon as we undertake an analysis of his symptoms. We can no longer conclude that the basis of the lunatic's false beliefs and hallucinations lies in a defect of reason involving a total imperviousness to contradictions and incongruities. The origin of abnormal mental processes does not lie in any disturbance of the reasoning powers *per se* but in the material which is presented to those powers.

The lunatic does not believe that he is God because he has lost the capacity to reason but because the idea is presented to his mind in a light which makes it the only plausible and rational conclusion possible. He appears to the superficial observer to be irrational because the superficial observer does not see the chain of mental processes which have produced the delusion, but sees only the delusion standing as an isolated phenomenon without any obvious basis or justification. The incomprehensibility of any delusion disappears as soon as we discover the sequence of the mental processes actually responsible for it.

For this reason it is useless to argue with a lunatic concerning his delusions, since our arguments will only be directed not against the hidden real cause, but against the superficial manifestation of the delusion.

The futility of argument against 'complex' is evident as soon as we attempt to argue with politicians or sectarians, for although even a politician may succeed in avoiding the fallacies of logic, his views on party-matters are obviously not the result of an impartial weighing of the evidence before him, but are conditioned solely by the particular type of "political complex" which he happens to share.

The political tenets of a politician in the beliefs of a strong sectarian, appear to them as propositions whose truth is at once obvious and beyond question. They cannot understand how anyone else in possession of the same facts could possibly arrive at a different conclusion.

As with the politician, so with the paranoiac, if we argue with him concerning his delusions,

the complexes upon which they rest will immediately protect themselves by one of two defensive reactions. Either the arguments against will be rejected as senseless or wicked, or a flood of rationalisations will be produced in order to invest the beliefs with a plausibility entirely satisfactory to their creator. The only difference to be observed in the two cases is the greater plausibility of the rationalisations of the politician compared with those of the lunatic.

To the psychological conception of insanity then is the credit due of having supplied the means wherewith to understand much that has hitherto been unintelligible in regard to the mental processes of the insane, and by so doing it has thrown light on the relationship that exists between these and mental processes that are not regarded as connoting insanity.

It was with insight therefore that Shakespeare wrote over three hundred years ago:

"Lovers and madmen have such seething brains,
Such churning phantasies, that apprehend
More than cool reason ever comprehend,
The lunatic, the lover, and the poet,
Are of imagination most compact" (8)

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- (2) Ditto, *op. cit.*, p. 63
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- (5) Ditto, *op. cit.*, p. 110
- (6) Ditto, *op. cit.*, p. 115
- (7) Ditto, *op. cit.*, p. 118
- (8) 'A Midsummer Night's Dream,' Act V, Scene 1

THE PREVENTION OF MENTAL AND NERVOUS DISEASES.

BY A OVERBECK WRIGHT,

MAJOR, I.M.S.,

Superintendent, Central Asylum, Aga

The old saying, "prevention is better than cure," is one, the truth of which has long been recognised, and which has for long been applied to many branches of medicine. Till recent years however but little has been done in this direction towards the prevention of the diseases it is proposed to discuss briefly in this article.

Much undoubtedly can be done towards the prevention of such conditions and it is the aim of this article to bring this briefly to the notice of the general practitioner and others in India, in the hope that through them much may be done to combat the ideas prevalent, though, in some provinces at least, fast disappearing, regarding the causation of insanity and the hopeless condition of those thus afflicted, and in this and other ways, to be discussed later, to start a prophylactic campaign against these conditions which may prove of benefit to posterity.

Owing to the atmosphere of conjecture and supposition which at present enwraps these conditions the problems to be dealt with here are

undoubtedly more complex than those which arise, let us say, in connection with the prevention of infectious diseases. Still a certain number of mental diseases are known to be due to causes as definite as the bacterial invasions to which certain infectious diseases are due. Thus in Korsakow's syndrome or in G P I, we know that in the former case the condition is wholly due to alcohol and would not have arisen had the patient refrained from alcoholic excess, while in the latter case the condition is due to syphilis, and its prevention consists solely in the prevention of syphilis.

In many, and sad to say the majority of, types of mental disease the aetiological factors are not so well understood, and this is the main reason which accounts for the numerous classifications at present promulgated, many of which are admittedly provisional and drawn up with a view to the results of further research rescuing various entities from the provisional groups to which they are at present relegated.

In discussing this subject it is proposed to consider first some of the factors which are known to produce, directly or indirectly, mental disease and at the same time to refer to possible means for their control. Thereafter other causes which it is believed have a considerable influence on insanity, but whose action is not so clearly proven, will be considered. Finally the means for a prophylactic campaign against such conditions in general will be discussed.

Infectious diseases are responsible for a certain percentage of cases, mainly of the types described in various classifications as confusional insanity, mania, exhaustion insanity, or the infective exhaustion insanities. During the last two years I have had cases under my care due to malaria, which furnishes, in my opinion, a very much larger percentage of the admissions to asylums in India than is generally believed, small-pox, typhoid fever, measles, and septicaemia, and there is no reason why any or all of the other infectious diseases should not have similar results. Influenza is known to be especially liable to produce mental derangements, "sand-fly fever" to my own knowledge in many cases leaves a condition of extreme nervous exhaustion and irritability closely akin to neurasthenia, while dengue also has a marked effect upon the nervous system. The action of these conditions as secondary or contributory causes it is impossible to estimate, thus they may determine a recurrence of insanity in a patient subject let us say to "circular" or "manic-depressive" insanity, or combined with other agents may precipitate an attack in which the infectious disease plays only a minor part.

The preventive measures in such cases are already being undertaken in the general arrangements which are being made for the prevention of the infectious diseases themselves, much

however can still be done by improving our methods of treating febrile conditions. A knowledge of hydro-therapy and the pathology of delirium and the evil results of continued high temperature on the nervous structures is essential to enable us to grasp the evil consequences which may ensue and to lessen the number of cases of mental disease arising from this cause.

Dr Mott in his article in Allbutt's System of Medicine, Vol VII, p 213, writes—"When the temperature of the body rises above the normal there is first an excitation of the neuron, then exhaustion, the exhaustion is the result of the oxygen being used up faster than it can be replaced and stored, and the neuron ceases its functional activity, it is not however destroyed unless the temperature rises to such a degree as to produce a heat coagulation of the neuroglobulin." Again on p 235 we find "(1) that a temperature of 109.5° F" (?) "can produce this coagulation and death of the protoplasm" (of the nerve-cell) "rapidly," "(2) that prolonged high temperature of 107° to 108° F will produce the same coagulative process." Dr Mott and Prof Halliburton working together found that a neuroglobulin in nerve-cells, which coagulates rapidly at 167° F (75° C) can be coagulated at a temperature between 107.2° F and 109.4° F if kept at this heat for about four hours. Goldschiedei and Mainne-co have found experimentally that a certain degree of this coagulative change may take place without the death of the cells, and Dr Mott considers this the explanation of the recovery which often takes place in some forms of hyperpyrexia when the cold bath is resorted to without delay.

Thus a high temperature affects the nerve-cells in two ways—(1) through their oxygen metabolism, (2) through the coagulation of the globulins and proteins of their cell-protoplasm. If in addition to these two factors we have a third, the presence of a toxine in the circulating fluids surrounding these cells, it does not require a very great effort to conceive why the mental faculties may be thrown out of gear in such conditions.

Syphilis is a much commoner cause of mental and nervous disease than is commonly supposed. In a most interesting and instructive article in the Journal of Mental Science, October, 1913, by Kate Fraser, M.B., and H F Watson, M.B., the results of their investigations into cases of mental deficiency and epilepsy by means of the Wassermann reaction is given. Their conclusions are as follows—

"1. Syphilis is the causative factor in a very considerable percentage of cases of mental deficiency of whatever degree of severity, as it is present in over 50 per cent.

"2. Syphilis is also the main causative factor in the production of that type of epilepsy which manifests itself at early ages. Syphilis is present

in an equal degree in those cases in which epilepsy is associated with mental deficiency and in cases where no apparent mental defect exists.

"3 The investigation by means of the Wassermann test into the families of defective children who have given a negative reaction, has shown that syphilis is associated with a still higher percentage of cases than is ascertained by the examination of the patients alone. At the same time an examination of the families of those children giving positive reactions affords further evidence of the presence of syphilitic infection."

"4 A very small percentage of cases of mental deficiency and epilepsy giving a positive Wassermann reaction show external evidence of congenital syphilis even where the family history and the examination of other members of the family afford practically conclusive evidence of the existence of syphilitic infection."

This alone would suffice I think to convince any reasonable being of the enormous scope there is here for prophylaxis, but when we consider its further effects on the central nervous system, the numbers who every year succumb to G.P.I. (yes, I am referring to India here as I am throughout this article, for I am convinced that G.P.I. is as common among Indians of all classes as it is among the inhabitants of any European country, and I have a dozen cases in the Agra asylum at the present moment to prove the truth of my contention), locomotor ataxy, cerebro-spinal syphilis, acquired dementia, &c., &c., we realise more fully the grim spectre which follows on youthful indiscretions and haunts posterity even "unto the third and fourth generation." The only reliable statistics to show the incidence of G.P.I. among those who acquire syphilis are those of Mattauschek and Pilcz, published in the *Berliner Clinische Wochenschrift*, February 19, 1912. As a result of their investigations into the histories of 4,134 officers of the Austrian Army who had contracted syphilis during the period 1880-1890, they found that 4.67 per cent of these officers developed G.P.I.

Tuberculosis is worthy of separate mention here as apart from the effects of exhaustion and debility, and the action of the tubercular toxine on the nervous system, one occasionally meets with a specially type of mental derangement characteristic of disorder due to tuberculosis. The main symptoms of this type of case are those of slight melancholia, combined with ill-defined delusions of a hypochondriacal, persecutory type. No further action beyond that already begun for combatting this disease is possible, but a knowledge that this is one of its possible effects might well be added to the information already disseminated about tuberculosis, for among the many benefits derivable from curing incipient cases and checking the spread of tuberculosis is

undoubtedly to be entered the diminution even in a slight extent of the prevalence of mental derangement.

Acute articular rheumatism and pneumonia at times give rise to mental disturbances. In the former case the mental symptoms appear commonly about the end of the second week though occasionally they are postponed to the later stages of the disease. Associated with rheumatism and endocarditis too we have chorea and choreic insanity which are points well worth keeping in view.

Having thus briefly touched upon the chief microbial diseases which may cause or give rise to mental disorder, let us consider for a little the chief poisons from other sources which may cause mental or nervous symptoms.

In this connection arises one of the great stumbling blocks in our statistical returns, viz., the distinguishing between habit disorders and aetiological factors. Many Indians are in the habit of taking very small quantities of one or other form of cannabis indica, especially in the hot weather, for the sake of its cooling properties. Such an individual is seized with mental symptoms due more likely than not to some wholly different cause. A cursory enquiry is made into the individual's history, perhaps through a sub-assistant surgeon, more often than not through the police, "bhang khata?" "cheras pita?" are almost invariably the first questions asked. "jee han!" comes the reply and down goes bhang or cheras as the cause of insanity and no further trouble is taken. In many cases one often has cause to wonder if even so much trouble has been taken. The result is that much of the information received with patients on their admission to asylums is meagre and unreliable in the extreme.

Cannabis indica is said to be one of the greatest of the factors which swell the asylum population in India. Going by particulars received with patients it undoubtedly may be and in some provinces it undoubtedly may play a much greater part as an aetiological factor than in others. In my experience, however, many cases are reported as due to cannabis indica which, on close examination, show none of the typical symptoms, physical or mental, which one would expect in cases due to this drug and further enquiry, either from the patient himself if he recovers, or from his relatives, generally elicits some other cause much more compatible with the symptoms exhibited, and in many cases a strenuous denial of ever having touched the drug in any form.

Opium is indulged in commonly, much in the same way as cannabis indica, and in my experience cases due to this cause are few and far between. Morphine is two rarely indulged in by Indians on account of its costliness.

Cocaine is a drug which is taking firm hold upon Indian, and in many cases the habit is formed before the unfortunate victim is aware that he has even been taking cocaine. A Hindu gentleman informed me that cocaine is commonly vended by prostitutes and pan sellers. The latter now a days at times even introduce a minute quantity of the drug into their "*char anna pan*". A man comes along and in complete ignorance of its contents buys one of these. It takes his fancy and he returns to the same vendor the next day and so on till he finds himself engulfed in a habit from which he cannot break himself. Chinese Europeans, and Eurasians, when they contract this habit, as a rule, take the drug in the form of snuff, and hence arises the necrosis of the nasal septum which is said to be such a common symptom among its slaves.

It is a habit which is undoubtedly increasing daily, and which though perhaps rarely causing mental derangement sufficient to warrant admission to an asylum as at present constituted, yet causes marked mental and moral deterioration insatiable and complete disregard of all family ties and obligations. One peculiar feature about such cases is the way in which they look upon the drug almost as a personality. At one moment they will hug and fondle the box containing it loading it with the most fulsome endearments and the next, without any apparent cause, they may throw it from them, pouring forth volleys of the vilest abuse at it. It is smuggled into India from France and Germany mainly by way of Calcutta and Bombay whence it finds its way to various distributing centres up country. A common trick among these smugglers is, I have heard to remove most of the cocaine from the bottles mix up antipyrine or some similar substance with the very small amount that remains, and place the bottle, thus prepared, in some easily discovered hiding place in the hopes that should a search be made of their premises the police, finding these bottles, may think they have no more to find and in this way several thousand rupees worth of cocaine may be perhaps saved. And what does the culprit mind if he be imprisoned so long as he has saved his merchandise.

Alcohol is not so frequent a cause of mental and nervous disorders in India as in countries where European races constitute the bulk of the population, mainly because of caste and religious customs which prevent the Indian on the whole from indulging in it. The effects of alcohol vary greatly not only between individuals but between races. The form of liquor indulged in has and undoubtedly with some reason, been brought forward as an explanation of this, others, however, support the view that a species of "alcoholic immunity" is produced in races who have drunk hard for centuries. The proof of this latter view is supported by the fact that most

primitive races are intolerant of alcohol, and unless the supply be stopped, it may even threaten the very existence of such races. Other points than these however have probably more to do with the matter. Thus the effects of alcohol are invariably greater upon those sprung from neurotic stock, and a very large number of habitual inebriates will, on enquiry, be found to have a tainted heredity. In fact just as an alcoholic parent may beget an epileptic or an idiot, so a parent who is of weak nervous stability may beget offspring who readily fall into alcoholic habits. Besides its effects on the nervous system we must also remember its action on the body generally and that by lowering the general resistance to infection by bacterial organisms it must of necessity be a strong predisposing factor to those insanities due to such causes. In fact as Craig ably puts it, "alcoholism is so far-reaching in its results that in the individual we find a progressive tendency to mental and bodily deterioration and a lowered resistance to bodily disease, in the offspring a proneness to idiocy, epilepsy and insanity, and in the race a higher disease rate, a higher mortality rate and a lower birth rate."

How far alcoholism is due to heredity is really a most difficult point to determine so many other factors having to be eliminated. Thus as pointed out by W. White in a person may inherit alcoholism directly from his father, but it is an equally feasible explanation that being subject to the influences of an alcoholic environment from early youth he has succumbed to these and acquired alcoholic habits. The alcoholism again may merely be an expression of some disease as in the manic-depressive psychosis or the reaction of this type of individual to the stress of some sorrow or failure. Yet again it is equally logical to assume that the alcoholism was not inherited, but the particular thing which made it possible for the father to become alcoholic and therefore, under the influence of opportunity, the son developed alcoholic habits as a result of this particular element in his being. Once more, and lastly, it is quite conceivable that father and son both being alcoholic is a mere coincidence and that no real connection exists between these facts.

Still heredity undoubtedly has an importance bearing on this point and must not be eliminated from our minds even though we remember the multitudinous number of other causes which may account for it. Thus habit accounts for it in many who first begin to drink for social or business reasons and then gradually increase the amount till they find themselves slaves to a habit from which they cannot free themselves. Others again commence the habit to enable them to support fatigue and exposure while others again resort to alcohol to stimulate a worn-out brain and body

to fresh exertion instead of restoring them by the rest and nourishment they require. Lastly alcoholism may be but an early symptom of an attack of one of the acute insanities or the sole remnant of a previous attack and due to the diminished self-control resulting therefrom.

Be its origin what it may there is no doubt as to its unfavourable effects on each and all of the types of mental disease, and its influence cannot be too strongly insisted on and borne in mind in any general scheme of prophylaxis undertaken against mental and nervous disorders. The prophylactic measures indicated against these aetiological factors lie mainly in a strict enforcement of the terms of the Poisons Act and registration and supervision of *pan*-sellers in the case of cocaine. In this class of case too the punishment for illegal possession might well be enhanced and made in some degree commensurate with the profits derived from such illegal traffic and the grave harm it causes to the race.

Cases of mental disease occasionally arise from poisoning due to occupations. These cases are mainly due to mercury, lead carbon-monoxide and carbon-bisulphide and the means for prevention naturally lies in the measures employed for safeguarding workmen employed in dangerous trades.

Having thus briefly attempted to outline some of the main factors, external to the body, in the causation of insanity let us consider for a little the possible internal or endogenous factors. Much work has of late years been done in this direction but much still remains to be done, and while theories and suppositions are numerous much proof still remains to be sought for here. Most of these factors are poisons due for the most part to some physical disease—nephritis, gout, enteritis—which in many cases is beyond the scope of preventive medicine. In considering these points it is well to remember that blood-pressure often seems to influence mental symptoms, in many cases even as much as toxines. Thus in manic-depressive insanity attacks of depression are usually associated with a high blood-pressure and those of excitement most commonly appear when the pressure is relatively low, so also in women mentally affected, attacks of excitement generally accompany the menses, when the blood-pressure is at a low level. Derangements of metabolism, the influence of "internal secretions," of toxines secreted in excess by bacteria normally saprophytic in the intestinal canal and supposed by some authorities to be essential in certain amount for the normal metabolism of the body, are all being investigated as possible factors in the production of mental and nervous derangement, and our knowledge of the influence of these is increasing daily. In this connection L'pine has shown that in epilepsy we have a

pathological complex to deal with (*a*) a cortical lesion, hereditary or acquired, (*b*) a toxic element, usually *gastro-intestinal* in origin, (*c*) an instability of the circulatory system and sudden changes in the circulation.

A history of injuries to the head is received with a certain small percentage of cases, and as proper regulation of traffic, especially in large cities, and proper measures for the protection of employes on railways and in large factories can minimise these to an appreciable extent it is not out of place to bring this forward in an article on this subject.

Heredity is undoubtedly the most important factor of all in the causation of mental disease. Statistics in India are of but little use in determining the percentage of admissions into asylums with a history of hereditary taint owing to the practical impossibility of obtaining any but the most meagre information in over 95 per cent of cases. European and American statistics, however, show an insane heredity in well over 50 per cent admissions. A brief summary of the results of recent research and theories on this subject is worthy of consideration.

The theory of the continuity of the germ plasm has caused much discussion. If it be true then, as Weismann states, the inheritance of acquired characters is inconceivable. The occurrence of toxines however in the nutritional fluids surrounding the cell as in syphilites and alcoholics may well affect the germ plasm, though so soon as the sperm cell produces fertilisation in the mother and is removed from such influences there is the natural tendency for the cell to reassume its normal characters, and even if the mother be similarly affected so soon as birth takes place, the child is removed from such influences and the same tendency to return to the normal is apparent. The questions thus raised are at present still unanswered mainly, as pointed out by Dr. White, "because up to the present time it has been impossible to define an acquired character." The best one can do, therefore, in the meantime is "to bear constantly in mind the fact that the individual is the result both of the tendencies which he acquired through the germ plasm of his ancestors plus the effects produced on him by his environment."

A study of the division of the chromosomes which occurs in the process of fertilisation lead to the promulgation of Galton's Law of Ancestral Inheritance, which is to the effect that each parent contributes $\frac{1}{4}$ of the heritage, each grandparent $\frac{1}{8}$, each great grandparent $\frac{1}{16}$, etc. This postulation, however, has been shown in recent years to be probably erroneous, a further study of the fission of the chromosomes and their "determiners" in the formation of new cells having largely contributed to discredit this theory.

The Mendelian Theory of Inheritance is, according to Dr. White, 'based on the fundamental conception that there are certain characters of the individual, usually called unit characters, that are represented by the determiners of the germ plasm. These determiners are conceived of as being definite material entities and, therefore, the inheritance of these special characters cannot be a blended inheritance in the true sense of that term but must be an inheritance dependent upon the segregation and grouping of these determiners, and Mendel endeavoured to formulate with mathematical precision the ways in which inheritance would manifest itself by determining all the possible combinations in which these determiners could group themselves.'

A further conception of Mendel's is that some of these determiners are "dominant" and others "recessive," thus if a flower contains a determiner for a red colour and a determiner for a white colour and the red determiner be dominant, the colour of the flower will be red but its germ plasm would nevertheless contain a white determiner, which even though recessive might still enable the flower to reproduce a certain number of white progeny.

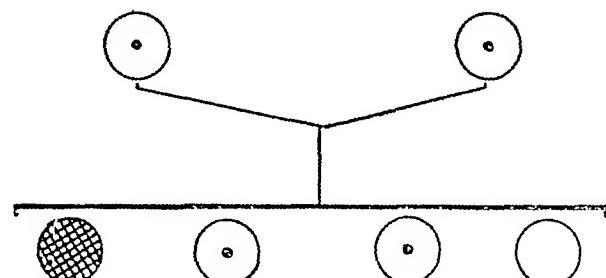
parents then the resulting offspring from Mendel's calculations will be 1 diseased, 2 with recessive determiner, and 1 healthy, whilst in B, the healthy parents free from tainted determiners, the family will all be healthy. If all the various combinations be thus worked out the influence of heredity on the human race and the impossibility of drawing eugenian conclusions from a consideration of the individual alone are very apparent.

Galton's Law of Filial Regression formulates the tendency of the offspring of a parent abnormal in one way or another, to revert to the normal standard of their race in this respect.

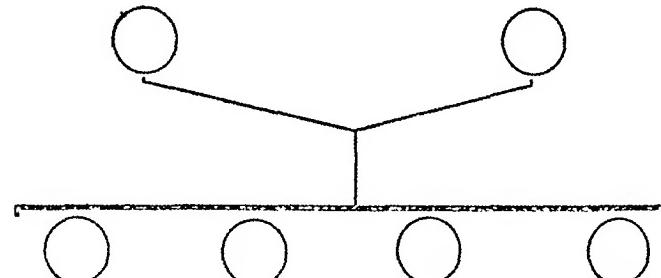
Karl Pearson has also formulated the law of fertility. "Fertility is not uniformly distributed among all individuals, but for stable races there is a strong tendency for the character of maximum fertility to become one with the character which is the type."

Lastly, and by no means least in this connection, we have the law of anticipation on which so much work has been done by Mott. Briefly it is that children of tainted nervous heredity become affected much earlier than their parents, according to Mott's results, on the average at half the age of the parent. In this process Mott sees an effort

A.



B.



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Mendel has worked out his theory exhaustively in the laboratory in connection with plants and lower animals which multiply rapidly and go through their cycle of existence in a comparatively short cycle. The situation as regards mankind is however, very different, small families, miscarriages, etc., are bound to throw out our calculations and make it impossible for us to foretell how any one child will develop. Its importance is considerable however and it is a point requiring much consideration when the question of eugenics is being discussed. For example let us take two cases of patients in each case absolutely healthy themselves but in one family both parents have a recessive determiner. By Mendel's law the results may graphically be shown as follows. If A represent

the part of nature to eliminate bad stock, so that, if left untamed, in 3 generations there would be a regression to the normal, provided no further unsound elements were introduced by bad mating.

A consideration of the theories and laws briefly summarised above gives us some idea of the enormous influence heredity must have on the race and how essential it is that some sound action should be taken in this matter to prevent the propagation of unsound stock. Not that I would recommend the lethal chamber or emasculation. Far from it! But I would advocate strongly the teaching of all elements of these laws in higher schools and colleges, and a gradual dispersion in this way throughout the country of this knowledge whereby perhaps a certain number at least of unsuitable marriages may be prevented.

Of late years the question of psychical causes of insanity has given rise to much discussion. Freud has started by his theories and doctrines what we may call the "psycho-analytic" school, of which Meyer, Hoch, Janet, and Jung may be quoted as some of the staunch adherents, though from his recent writings Jung appears to be changing his ground and deserting the tenets of his master.

Freud's theory briefly put, is based on the idea that every hysterical symptom is the result of a series of amnesias of which the patient is unaware, and that the source of these is generally though not invariably, found associated with some painful memory, and explains this abnormal action by certain modes of reaction peculiar to the hysterical mind.

One of these peculiarities he terms "Repression." The patient behaves towards the memory as if she were ashamed of it, dislikes to think of it, will not speak of it, and tries to banish it from her mind. Such cases seem almost as if the patient had been anticipating the incident and as if she were reminded by it of previous thoughts of which she was ashamed. Thus if a girl of neurotic type had been indulging in sexual fancies picturing herself the victim of a sexual assault and then had actually undergone such an experience. It is quite possible that such a girl might have a guilty sort of feeling in the matter, on account of her previous fantasies and perhaps even conceal the fact from others. It is typical of such cases that they are apt to wander unconsciously in places favourable for such assaults and hence are more liable to fall victims to them. Such an example is crude and yet more readily conceivable than where the occurrences are more innocent or entirely accidental, such as the death of a lover or an outbreak of fire. Still the existence of such a mental condition explains, according to Freud, all such cases, and hence here we have to consider not the trauma so much as the previous development of the patient's mind using the trauma as the starting point of the enquiry.

In extension of this Freud introduced the property of "dissociation" by which is meant the processes by which thoughts incompatible with the higher ideals of religion, morality, duty, &c., are banished from the mind and with them all thoughts that might in some way, through some connection, arouse them. These processes Freud terms "censors."

Further research convinced Freud of the enormous part played by phantasies not only in neurotics but in the life of each and all of us. Thus let an individual experience a wish or desire to have or achieve some object. Two courses are open to him, the easier is to imagine the wish fulfilled and revel in its imaginary enjoyment, and this is especially apt to occur when

its actual fulfilment is a matter of difficulty. If one thinks for a moment hundreds of instances flock to one's memory of such cases as this the grim fight between phantasy and reality, and without phantasy after all life would be bereft of much of its pleasures and solaces. Thus a widow recently robbed of her husband seeks refuge in bright memories of the past, or dreams of the happy future when they will be united once more—the cold, lonely present, the reality, is too grim for her to face. It is commonly recognised that those of a neurotic, hysterical constitution are much more given up to phantasy than the rest of their fellow-men and in such cases "dream-traumata" often have the same effect as real ones. Hence in these cases one has to remember this point and give equal weight to what is unreal as to what is real in the patient's history, provided one thinks there are sufficient grounds for doing so.

As shown above this indulgence in phantasy is undoubtedly a source of pleasure, and to renounce this and return to grim reality is too much, as a rule, for such cases. Freud by his methods of analysis shows that these represent therefore an imaginary gratification of secret desires and gives to this process the term "with fulfilment."

Further investigation developed the hypothesis that a symptom may be determined by several factors at times "convergent" (being of different origin), but more usually merely different phases of the same continuous tendency. This process Freud endowed with the title "over determination." By this Freud maintains that all such symptoms can be traced to deviations from the normal at a very early age, often to the first three years of life and always to below the first five.

The term "conversion" has been used by Freud to designate the replacement of a mental by a physical manifestation. According to him this process occurs more readily in hysterical cases, and in these cases also there is often a special predisposition for this aberrant energy to be discharged by some given part of the body.

So far, I think, Freud's theories are, on the whole, widely recognised as presenting the possible explanation of many of the symptoms manifested in neurasthenic and hysterical cases. The further extension of these doctrines into paths of "sexual perversions" and "erogenous zones" is by no means so readily accepted and is indeed strongly combatted by many, and as it is by no means necessary to our theme there is no need to occupy space by unnecessarily expounding it.

From the above it is evident how necessary careful training and choice of environment is in children of such types. The necessity of not instilling a false sense of shame and hypocrisy into such children is at once apparent. Then parents should endeavour to maintain the closest sympathy and understanding with them, which

will allow of frank and sensible consultations on sexual questions when they arise, and prevent to a very large extent the serious consequences of the processes briefly enumerated above. It is for such cases as these that psychiatric clinics would be of undoubted service many of them in the early stages would in all probability be saved from further trouble whilst in more advanced cases much relief could undoubtedly be obtained while parents and relatives would be able to obtain timely advice on the upbringing of such children.

Other causes contributing to the aetiology of mental and nervous disorders are numerous and in many cases seem to outweigh all others. Child marriages are undoubtedly to be reckoned with in the aetiology of mental disease in India. In such cases, where one or both parties to the union has not arrived at maturity, setting aside for the moment the disastrous effects to the offspring, the nervous and physical strain of such premature unions is bound to be enormous and tell heavily on the individual in later life. The offspring too in such cases are bound to be affected at first by the immaturity of the parents, and later by the vitality of the parents lowered as it must be by such premature sexual indulgence. Unemployment, privation overwork child labour are but a few of the many causes under the stress of which weaknesses develop which under happier circumstances might never have arisen.

Having thus briefly reviewed some of the main aetiological factors to be contended with, the next point which arises is the views prevalent among the population in India generally regarding insanity, its causation, its possible termination, and the character of an asylum so in my own experience these are the earliest items to be dealt with in a prophylactic campaign of the type we are considering. Judging from the accounts given by the relatives and friends of patients admitted to the asylum, even by those of educated families of good position and standing the persistence of the old views of "possession," "a curse by a *fakir* for some slight," a "punishment by some deity for some neglect in religious observances or for felling a tree or damaging some property dedicated to them" is practically universal. The effect of such beliefs on their views as to the course and progress of the disease and its proper treatment can be readily imagined and requires no exposition here. As regards their ideas of asylums, I have never quite arrived at the truth of this. Two views seem to prevail according to whether the person is a relative of a patient or merely a friend or come, perhaps out of curiosity, perhaps with a real wish to acquire knowledge, to "see an asylum." The latter class seem to look upon it as a sort of menagerie or circus where they will see a lot of "wild animals" performing tricks, perhaps being

fed for their benefit. The former seem to look upon it with honor as a sort of place of perpetual confinement where the inmates are either herded together in sheds like wild animals, or shut up for ever in eternal solitude. To whichever class the visitor belongs I think he leaves us with his views very considerably altered. In fact one such visitor, well educated and intelligent when leaving remarked "An asylum? This is not an asylum! It is a hospital where sick people are treated! Why is it not called a 'hospital' and its true nature spread among the community?"

And now let us consider on what lines prophylaxis should be begun. The first and most important step is undoubtedly to uproot the old ideas and prejudices regarding such cases and the character of asylums. To do this is not the work of months but of years but it can be done undoubtedly, not only by alienists but by the general practitioner, through schools and in other similar ways. Let the title "Asylum" be discarded. It will take longer to strip it of the old erroneous prejudices attached to it than to vest in a new title a proper belief in all the relief and benefits derivable from such an institution. "Mental Hospital" is not so much longer nor so much more difficult to pronounce and gives at once a true idea of the intention of such institutions and one which can be readily grasped by the most ignorant "iyot." Even though they dubbed it "*pagalar-kar-hospital*," what matter! They know the benefits to be obtained at a hospital and its purpose and at once we effect two purposes, we do away with the old ideas and prejudices attached to the term "Asylum" and at the same time instil a dim perception of the fact that if it is a hospital then its inmates must be ill and as all illness is not incurable why should not some of these invalids also recover. To still further carry out this view would be to start "out-patient departments" in connection with such institutions. Here incipient cases might be brought for advice and consultation, cases who have had previous attacks, relatives seeking advice would all have the benefit of expert opinion. Such dispensaries would be found to afford many opportunities for the application of preventive measures and the dissemination of knowledge.

Theoretical and practical instruction could and should be given in such institutions whenever they are sufficiently near to Medical School to allow of this being done, and a course in "Mental Diseases" should be as equally necessary in the curriculum of all such schools. In addition to this post-graduate clinics could be held, and thereby the general practitioner would gain the latest views on the subject and be better able to recognise the import of early symptoms and the necessity of expert opinion as well as rendered more competent to help in instilling a proper

view of the subject among his clientele and to assist in this way in the general campaign.

All this would undoubtedly entail extra expenditure to the State but in all probability the amount saved on account of the larger number of individuals thus rendered competent to earn a livelihood and the lessened number of those rendered incapable by such conditions and a helpless burden either on their relatives or the State would fully equalise if not exceed the extra expenditure thus entailed.

In addition to the above the medical staff of such institutions should lose no opportunity of spreading the true aspect of such cases in conversations with Indian gentlemen.

Lay societies also can do much in this connection, Europeans and Indians Mussulmans and Hindus all have societies and social bodies for promoting the welfare of the community. In many stations "medical societies" exist clubs and various societies prevail in nearly all stations and many of them have periodical meetings where papers are read and discussed. Here then lies another fruitful source of disseminating information on this subject.

The introduction of little elementary articles on the subject into school primers as has I think been done in connection with malaria and other similar subjects, would also be a useful means of disseminating such knowledge. An extension of this idea would be the preparation of leaflets and then distribution among those visiting asylums.

These are the main means at present possible in such a campaign as is the subject of this article. One other thing however is urgently called for in India and that is the founding of institutions for training mentally defective children. Many such children, if taken in hand early, can be turned out useful members of society, capable of supporting themselves in some simple trade instead of, as at present swelling the ranks of the criminal, the loafer, the beggar, of those who not only constantly prey upon the community but in addition by the dirt and squalor of their person and surroundings prove a fertile source of danger in the dissemination of infectious diseases.

All this undoubtedly entails expenditure, but I venture to submit that the scope of such a preventive campaign is enormous and the results to be expected are correspondingly large. The subject embraces a very much wider sphere than, let us say, a campaign against malaria, affects the community at least to an equal extent and is capable undoubtedly of producing equally good results if taken up thoroughly and with patience.

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GANJA AS A CAUSE OF INSANITY AND CRIME IN BENGAL

BY A S M PREBBLES,

CAPT, I.M.S.,

Superintendent, Central Lunatic Asylum, Bengal.

AND

1ST CLASS MILITARY ASSISTANT SURGEON H V MANN,

Deputy Superintendent.

The object of the following note on *Ganja* as a cause of insanity and crime is not to deal with the pathological and clinical symptoms of the effects of the drug (these having been described by the late Lt-Col Lewens I.M.S. in the *Indian Medical Gazette* of November, 1904, and also by the late Major Robertson Milne, I.M.S., in the *Indian Medical Gazette* of April 1906) but to consider solely the amount of insanity and crime which is directly attributable to the continuous use or abuse of *ganja* in Bengal. The observations are based upon a study of the admissions to the Berhampore Lunatic Asylum for a period of ten years from 1901 to 1913 inclusive.

The assumption that *ganja* has played the most prominent part in the cause of the mental condition has been based upon —

(a) The information received on the patients' admission.

(b) The clinical symptoms noted.

(c) The statements of the patients themselves in many cases.

During the ten years under review the total admissions from all causes were 1,163. Of these 652 were criminal, and the remaining 511 non-criminal lunatics.

The cause of the insanity was directly attributed to *ganja* smoking to the extent of 162 in the case of the criminal lunatics and 150 in the case of the non-criminal lunatics.

The following table of percentages will perhaps give a clearer view of the foregoing statements.

Total admissions	Criminal admissions	Non criminal admissions	CASES DUE TO Ganja	
			Criminal	Non criminal
1,163	652	511	162	150

Percentage of criminal admissions to total admissions 56·06

Percentage of *ganja* cases criminal and non-criminal to total admissions 26·83

Percentage of criminal *ganja* cases to total criminal admissions 24·84.

Ganja is therefore accountable for about 27 per cent. of the total admissions and almost 25 per cent. in the total number of criminal lunatics

The nature of the crime committed by the patients has varied from house trespass to that of murder. The crimes have been classified as serious and trivial. The former include only those which were assaults or attacks on the person or arson, and range from murder to grievous hurt. In the latter category are the more trivial offences, *viz.*, house trespass, theft, etc.

In the period under review the serious crimes totalled 58, the trivial offences 104.

Of the 58 serious crimes no fewer than 24 were adjudged by the courts to be cases of murder or culpable homicide. The remainder with few exceptions, such as arson, were cases of grievous hurt.

In relation to the caste of the patients admitted the Hindu numbered 127, the Mohammedans 31, whilst 4 were Native Christians.

Of the total admissions attributed to *ganja* only one was a female.

The indulgence in the drug seems in no way to be confined to any particular sect or class. The occupations varied from that of a landowner to that of a beggar, and covered practically all professions and trades.

It has been endeavoured to correlate the duration of the habit with onset of mental symptoms, but the periods given are in many cases so absolutely untrustworthy that the results arrived at are useless.

It has also been impossible in the great majority of cases to arrive at any trustworthy or definite opinion as to the amount of the drug consumed either daily or periodically by its habituees. The answers both from friends and patients being so very variable as to render them useless for any purpose of classification.

There is no doubt as to the extensive prevalence of the *ganja* habit in one form or other in India generally and also that there are many cases which ought to be in asylums that at present wander freely about the country, a perpetual source of annoyance and worry to their friends and relatives. The mental condition of these is directly due to the use or abuse of the drug, and they are only ultimately sent to asylums when they have offended against the law or else become such intolerable nuisances to their friends as to cause application to be made for their removal and detention.

Taking these latter facts into consideration, although the above note serves to show only in a small degree some idea of the extensive harm caused by the use and abuse of the drug, it may demonstrate to what an extent it is answerable for the derangement of the mental functions and the consequent causation of crime "whilst under its influence."

NOTICE

If has been found impossible to publish in one issue all the papers we have received for this Special Insanity Number. In our next issue, therefore, we shall publish the remaining special number papers, *e.g.*, papers by Major P Heffernan, M.S., on Hysteria and on Asylum Dysentery, by the late Lt-Col Ewens on Stupor and by Asst-Surgeon Bhiday on the treatment of Aneuric Stupor.

On account of these special papers it will be understood that many papers in hand on other subjects are unavoidably held over.—*Ed., I.M.G.*

THE BENGAL MEDICAL COUNCIL

The constitutions of the Bengal Medical Council is now complete and the following medical men have been appointed.—

I. *The 21st September 1914*—In exercise of the power conferred by clause (a) of section 4 of the Bengal Medical Act, 1914 (Bengal Act VI of 1914), the Governor in Council is pleased to nominate Surgeon-General G F A Harris, C.I.E., M.D., I.M.S., Surgeon-General with the Government of Bengal, to be President of the Bengal Council of Medical Registration.

II. The Governor in Council is also pleased, in exercise of the power conferred by clause (b) of the said section, to nominate the following gentlemen to be members of the said Council, namely—

(1) Lt-Col W J Buchanan, C.I.E., M.D., I.M.S., Inspector-General of Prisons, Bengal.

(2) Lt-Col E A R Newman, M.D., I.M.S., Civil Surgeon, 24-Parganas.

(3) Lt-Col F O'Kinealy, I.M.S., Surgeon-Superintendent, Presidency General Hospital.

(4) Lt-Col J T Calvert, M.B., I.M.S., Principal and Professor of Medicine, Medical College, Calcutta, and First Physician, College Hospital.

(5) Lt-Col C R Stevens, F.R.C.S., I.M.S., Professor of Clinical and Operative Surgery, Medical College, Calcutta, and Surgeon to the College Hospital.

(6) Major D McCay, M.D., I.M.S., Professor of Physiology, Medical College, Calcutta.

(7) Rai Upendra Nath Brahmachari Bahadur, M.D., Teacher of Medicine, Campbell Medical School, Calcutta.

III. *Duly elected under clause (d) of section 4*
Lt-Col A E Harold Brown, M.D. (Durh.), M.R.C.P., &c., I.M.S. (retd.)

IV. *Duly elected under clause (e) of section 4*

Dr S. Sarbadikar, M.D.

Babu Hari Dhan Dutt, L.M.S.

Dr Kedar Nath Das, M.D.

V. *Duly elected under clause (f) of section 4.*

Dr. Sarat K. Mullick, M.D. (Edu.)

Rai Sahib Gurus Chandra Bagchi

AGRA LUNATIC ASYLUM.

inclusive

CLASS	2			Annual years											
	1 - ERRORS OF DEVELOPMENT			1911-1912											
	141 IDIOCY			MANIA (ACI)						SEPT OCT NOV DEC					
	(a) Idiocy	(b) Moral (congenital) imbecility	Total	(a) Puorperal	(b) Epileptic	Total	(a) Males	Females	Total	(a) Males	Females	Total	(a) Males	Females	Total
Remaining on 31 Dec 1912															
Assam	3		3												
Bengal	33	9	42	20	8	28				5	1	9			
Bihar and Orissa	9	2	11	1		1				9	2	11			
Bombay	45	10	55							26	9	35			
Burma	14	2	16							7	2	9			
Central Provinces	10	5	15		1	1				14	4	18			
Madras	28	9	37	3		3				23	9	32			
Punjab	22	15	40	1		1				67	12	79			
United Provinces	39	19	58	18	5	23				39	16	55			
All India	203	77	280	43	14	57				229	57	286			
Admissions															
Assam															
Bengal	2	2	1			1				9	1	10			
Bihar and Orissa	1	1	1							6	3	9			
Bombay	39	5	44							15	1	16			
Burma	1	1	2	5	1	6				13	2	15			
Central Provinces	4	4	1	1		1				1	1	2			
Madras	3	1	4	9	4	13				12	3	15			
Punjab	2	2	4	2		2				15	3	18			
United Provinces	8	2	8	9	4	13				12	2	14			
All India	59	11	70	27	9	36				85	14	99			
Total Treated	262	88	350	70	23	93				66	66	134	71		
Discharges (a) Cured															
Assam															
Bengal															
Bihar and Orissa															
Bombay															
Burma															
Central Provinces															
Madras															
Punjab															
United Provinces															
All India	1	1	2	2		2				16	9	25			

* Colaba Asylum (accommodation 174 males and 84 females) and Poona to the same extent

CHARTS OF MONTHLY ADMISSIONS INTO AGRA LUNATIC
ASYLUM DURING SIX YEARS 1908--1913 INCLUSIVE

CHART II

Combined Monthly Admission
Curve for six years

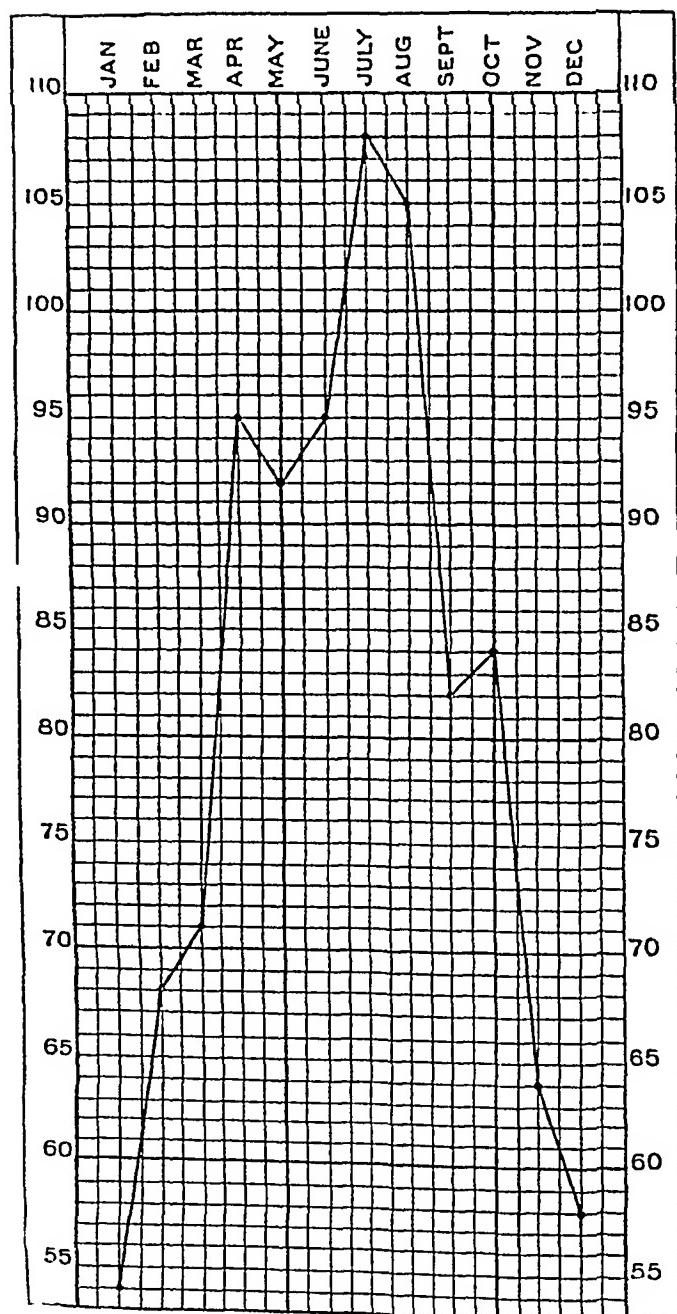
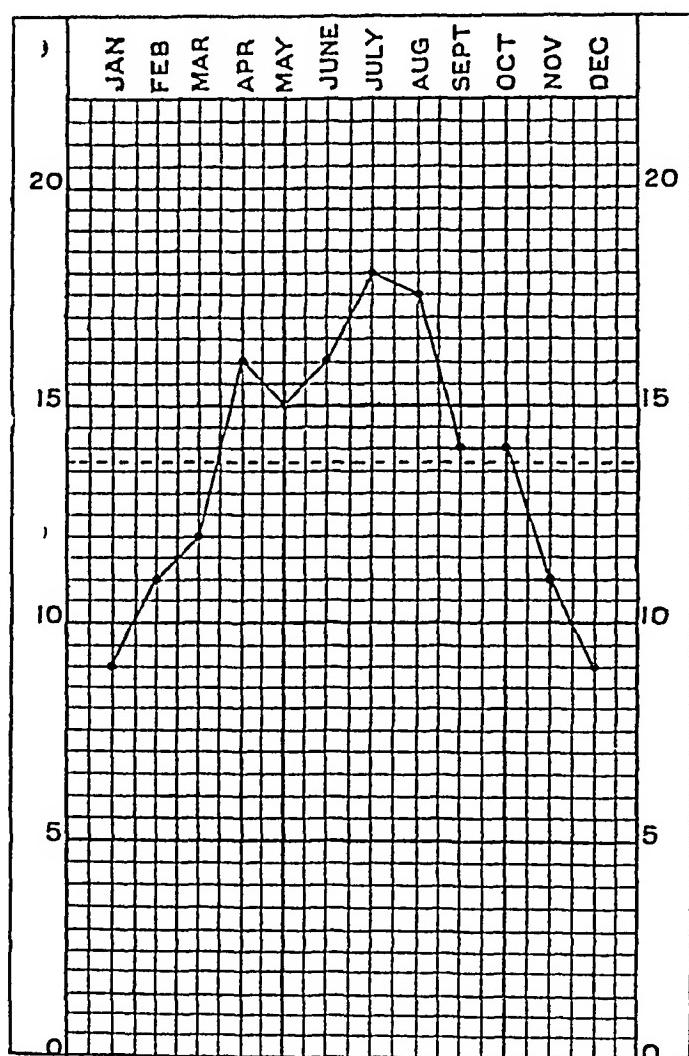


CHART III

Average Monthly Admission
Curve for six years



Indian Medical Gazette.

OCTOBER

WAR GIFTS FOR HOSPITALS

WE beg to call special attention to the following communiqué —

"The Indian Council of the St John's Ambulance Association have noticed in the press that the proceeds of various entertainments, race meetings, etc., have been given to what is called "The Red Cross Society." The Council desire to point out that the Indian Branch of the St John's Ambulance Association is the only Ambulance Society in India, and that it performs for the whole of the Indian Empire the functions of the British Red Cross Society and similar Societies in foreign countries.

The St John's Ambulance Association, in addition to forming Voluntary Aid Detachments, is now organizing, with the approval of the Viceroy and the Commander-in-Chief, a complete system for providing gifts and comforts for the troops, British and Indian, which are being sent from India to fight for the flag overseas, and the Council has made a special appeal to all centres and to the public for this purpose. Until this object has been attained, it is hoped that all funds collected will be devoted to Indian uses and not sent out of the country. They wish to point out that 'charity begins at home,' and that every rupee collected by the Indian Council of the St John's Ambulance Association is devoted to the benefit of India and Indians.

The British Red Cross Society has no branch in India and it does no work whatever in this country."

In Bengal the Fund organised as the Women's Aid Fund by Her Excellency Lady Carmichael is to effect the same aim as the St John's Association, and we understand that gifts from the Aid Fund are being sent to the Bombay St John's War Gifts Depôt for despatch to the

General-Governor. General Babtie has circulated a list of articles which are intended mainly to supplement articles provided by Government and not to defences, and in a circular letter of 19th

Sir Pardey Lukis clearly explains this. At the same time Sir Pardey Lukis recommends the establishment in every station in India of Voluntary Aid Detachments consisting of a medical attendant, a medical man, two or more men in First Aid, and seven women, who hold First Aid and Nursing Certificates. Such Aid Detachments could be usefully employed at Rest Camps, Railway Stations, &c.

We hope that a full and complete response to our appeal will follow—indeed we know that much has been done in this direction.

STATISTICAL RETURNS OF INSANES IN INDIA *

ONLY when compiling such a statement as No. I of this note, does one realise fully the want of some periodic combined Asylum Report for all India. In it the bare facts are gathered together and placed tersely before one, and in very truth there is but little cause for complacency.

Let us first briefly consider the relative positions of insanity and asylums in India. In the census report for 1911 the proportion of insanies per 100,000 is noted as 26 or 27. These figures, however, are intended to include only those who suffer from the more active forms of mental derangement, and admittedly only a very small percentage of weak-minded persons are included in this category. In England and Wales the proportion is 364 per 100,000, but this includes the weak-minded as well. If such were included in Indian returns we think all who are conversant with district-life or the *mohallas* of any large Indian cities will agree that the latter proportion is very much nearer the truth. Undoubtedly much weak-mindedness remains undiagnosed owing to the simpler life prevalent among Indians calling for a much lower standard of average intelligence, and again, owing to the feeble resistance of the weak-minded to disease, many such cases probably die at an early age instead of being fostered by a kindly jurisdiction as is the case in England.

The effect of the spread of civilisation on the production of insanity is still an open question. As pointed by Friedgold, where civilisation has progressed gradually the mental faculties probably have developed *pari passu* and the wear and tear of nerve tissue now-a-days is no greater than it was some 500 years ago. The matter, however, is totally different when one comes to deal with a nation which has vegetated for some hundreds of years and then suddenly awakes to its position and strives to reach at one bound an acme of culture and learning attained by other nations of the same period. In such a case the average brain is not sufficiently developed to meet the calls upon it arising from the altered environment and such a nation must be prepared to pay a heavy bill in nervous and mental breakdowns if it is to attain the object of its ambitions.

Leaving this, however, and taking the census figures as our text, what do we find? Out of a population of 259,716,307 (we are dealing only with Presidencies and Provinces, the figures if Native States were included would be still more startling) we have 67,836 insanies, and for the care and treatment of these asylum accommodation exists for 7,243, or, in other words, roughly one out of every nine insanies can receive

* For this article we are much indebted to Major Overbeck, W.M.S.

treatment in the institutions most suited for the care and treatment of such cases.

The matter is an important one in its relation to a nation's welfare, and already its force is beginning to be realised by many. We may hope that a knowledge of the true nature of insanity and its importance as an agent in the prosperity of a nation may be among the first fruits of the progress of the Indian races and lead to local sects and bodies forming institutions of their own for the proper care and treatment of such cases, as well as combining in a prophylactic campaign against their common enemy.

Such a state of affairs undoubtedly will arrive, in fact, even now one can see signs of its approach, and to our knowledge at least one ruler of a Native State is considering the question of erecting a lunatic asylum in his domain, and India's progress in this direction would certainly be shown, even if not ideal, by the periodic compilation of such a combined return.

Such returns too would render those from various Presidencies and Provinces more uniform and complete, and such a consummation is much to be desired as a study of the various annual returns will show.

In Table I of the Annual Returns for instance the majority of asylums calculate the percentage recovery-rate and death-rate to the admissions from the total recoveries and deaths occurring in the asylum, instead of from those occurring among admissions only, as is done in some asylums. The result is that in 1913 in one asylum at least these percentages combined exceeded the admissions by some 28 per cent.

By such a method of calculation moreover valuable information which can only be obtained by search through the asylum registers is left unrecorded, while information is given which is of little practical value and which a moment's calculation would supply from figures already available in the table.

Various fallacies such as this would be eliminated by a combined return and valuable additions could be made, while a strict definition of the various headings in such forms as (Table I of this article) would go far to eliminate the personal equation, introduce a more uniform classification than exists at present, and provide India with more reliable and uniform statistics on this subject.

The most pressing additions required in the present forms are in Table VI of the Reports where, in place of a single column for "Delusional Insanity," a major head of Dementia Praecox subdivided into "Delusional Insanity (paranoid)," "Kraitoma," and "Hypomania" is necessary. These clinical entities are valuable indices as to the amount of neurotic heredity existent in a community and, in view of our present state of knowledge as regards the amount of mental disturbances incident in India, such a record would be most useful

instead of burying them, beyond the possibility of resurrection, among cases of mania, stupor, or dementia, as undoubtedly occurs at present.

Another column in the same table which might with advantage be altered is "Insanity of Haschish." Haschish is a preparation of Indian hemp practically never seen in India and to head a column, intended for "insanity due to Indian Hemp" with such a designation is not only misleading to those unacquainted with India, who peruse the returns, but gives an impression of inaccuracy which is most undesirable in any statistical table. In support of their contention we may glance at the returns from Bombay Presidency. Fourteen cases are shown as admitted during the year suffering from "Insanity of Haschish," and yet, under etiological factors, Indian hemp, in one or other form (Haschish is not mentioned in this table) is shown as a predisposing factor in 31 cases and in 27 cases as an exciting factor. Under such circumstances one is surely justified in assuming mis-understanding to exist regarding the signification of the headings.

Before entering into a consideration of the figures in the annexed tables it is necessary to note that the closing of Colaba and Poona asylums in Bombay and the transfer of 287 inmates from them to the newly opened asylum at Yeravda, introduces an element of danger in calculating percentage rates from, and basing deductions on, the most recent figures available (Asylum Returns for 1913).

Much can be gathered from Table I. A superficial glance shows four distinct columns running through it, with a broader less defined band on either side. These columns are found on closer inspection to be due to "Mania, other forms;" "Melancholia, other forms," "Insanity of Haschish," and "Delusional Insanity," while the broader less defined bands at either side are due to "Idiocy" and Dementia respectively.

Mania in all its forms comprises some 44 per cent of the total treated in asylums during 1913; Melancholia accounts for 15.9 per cent, Insanity of Haschish 6.6 per cent, Delusional Insanity 4.8 per cent, Idiocy responsible for some 5.2 per cent of cases, and Dementia in its various forms 5.7 per cent.

The proportion of females to males in asylums is a little over 1 to 3 and in the general population slightly above 1 to 2. Probably the ideas still largely prevalent among Indians regarding the nature of insanity and the true object and character of asylums have a good deal to do with these proportions as well as their reticence about their women-folk and their unwillingness to send them from home even for medical care.

The entries under "General Paralysis of the Insane" are well worth a little attention. For many years practitioners in India had it drilled into them that "G. P. I." was unknown among Indians who had never left their mother-country. During the last 2 or 3 years this has been modified to "extremely rare," but the result is the same,

and I think we are fairly right in saying that many medical men would never dream that a case could possibly be "G.P.I." even though all the cardinal symptoms were obviously present and would pooh-pooh the very suggestion of such a possibility as absurd. The returns show that some at least of the presidencies and provinces are unbiassed in their diagnosis while others seem to be swaying to a broader view of the matter.

In the light of our present knowledge, if the general view be correct, then there must be some secondary aetiological factor, as yet unknown to us, in the production of this disease, for syphilis is as rare in India as anywhere. This being so, a double course of action seems necessary. Firstly because "G.P.I." is said to be extremely rare, let us, even if we accept this dictum, at least keep our eyes open for it and not be afraid to diagnose it. In doubtful cases, or if our diagnosis be questioned, we have valuable corroborative testimony at hand. A lumbar puncture and an examination of the resulting cerebro spinal fluid by Wassermann's reaction, the test for globulin, and a lymphocytic count will soon prove whether our diagnosis be correct or not. Unfortunately state of our patients and various other factors contra-indicate this as a routine method of examination in asylum practice unless some doubt as to the diagnosis renders it necessary in the interests of the patient and his relatives. Still it is there to support us—and in case of my question being raised as to our diagnosis we have strong evidence to substantiate our statements.

Secondly, let those who so dogmatically lay down the absence of "G.P.I." seek for some evidence in support of their statement and, still more to the point, let them seek still more carefully for some reason to account for its absence with syphilis as rare as it undoubtedly is. In our experience such cases are generally admitted during an exacerbation of excitement in the second stage of the malady, and in such circumstances they are very liable to be diagnosed as "chronic mania" and to be lost sight of among the chronic insane, who constitute such a large proportion of the asylum population in India.

The returns too under "insanity due to cocaine" are well worth perusal in view of all that has been said and written of late on this subject. Though its effects on the physical, mental, and moral conditions of its devotees is undoubted, and very much the same as that of opium or morphia, its direct power as a factor in the aetiology of insanity would seem to be very slight indeed, less so apparently even than that of opium or morphia, though, in the absence of any figures bearing upon the extent to which these drugs we resorted to, we can but indulge in surmise upon this point.

Cases of insanity due to epilepsy (epileptic mania and dementia) account for only 1.5 per cent of the cases treated during the year, while among admissions it is noted as a causative

factor in 107 cases or 4.13 per cent. The discrepancy is undoubtedly due to many cases of idiocy being due to or complicated by this disease, and probably the real proportion of epileptics in Indian asylums is considerably over the percentage shown among admissions, as such cases of idiocy when once admitted drag out their lives in the asylum and hence there tends to be an accumulation of these cases in all such institutions.

The recovery-rate per cent amounts to 8.8 per cent, on the total treated and on the admissions (taking the total recoveries as is done in the majority of asylums) to 33.1 per cent. The recovery-rate is highest among cases of "Insanity of Hischisch," while cases of "Mama other forms," come next.

The death-rate per cent on the total treated amounts to 7.4 per cent and on the admissions (calculated as for the recovery-rate) to 28.6 per cent. The chief incidence here falls on cases of mania with dementia and melancholia, coming next in order.

And now let us begin the consideration of the aetiological factors by glancing at the three charts which accompany this note. These charts were drawn up to see if by them an explanation could be found for the falling off of the admissions into Agia Asylum during 1913 as compared with 1912. The result fully repud the labour expended on it and besides giving a satisfactory explanation of the deficiency supplies most interesting information as well. The figures worked with are we admit small, but comprised in those available, and a consideration of the result, we submit shows that the reliability of deductions based on them is well substantiated by experience.

Charts II and III reveal one large wave with two lesser ones superimposed. The large wave can be due to but one cause, the effects of the hot weather. The secondary ripple occurring in September and October is presumably due to malarial fever, and the secondary wave in April with the rise up to it to the effects probably of pneumonia, chills, and malaria. A study of the six individual curves in Chart I goes far to substantiate these deductions. In 1913 for instance we have a break in the primary wave due to the extremely mild hot weather, fever undoubtedly does not account for the secondary rise in October for the incidence of fever was unusually small in 1913 owing to failure of the rains. Its presence, however, is, we think, explained by the abnormally hot and trying weather during August, September, and October, while the further rise in November and December is probably due to distress and poverty. Similarly a study of the five other curves along with a record of the weather during the same years gives us in every case a common sense physical or climatic explanation of the variations from the average curve in Chart III.

These charts, in our opinion, therefore, justify one in emphasising the tremendous part played by physical causes in the aetiology of mental derangements, a fact which is too apt to be discarded as of small matter.

In considering Table II, one is at once struck by the large number of cases shown as admitted with defective histories. Such cases are not all due to faulty enquiries by any means. Pilgrims, *saints*, *sadhus*, *goops*, beggars get their identity lost beyond hope of recovery and if such people lose their senses it is impossible to expect any information to be available regarding them.

A tainted heredity figures very prominently among aetiological factors. If we include group B along with group A then some 540 of the 2,346 admissions are victims of this curse.

Group II, "Toxic," comes next in importance, accounting for 416 cases, of which Indian hemp alone accounts for 273, alcohol coming next among drugs with 97 cases. Among physical toxemias fever stands pre-eminent accounting for 81 cases, though, if any stress can be laid on the curves noted above, it probably figures in a good many more cases and has been unobserved or forgotten about by the relatives.

"Mental stress" accounts for 277 cases, of which 93 are due to sudden shock and 184 to prolonged strain.

"Physiological defects and errors" produce 136 cases, privation and starvation accounting for 107 of these, over-exertion for 16, and sexual excesses 9.

Diseases of the nervous system were present in 128 of the cases admitted, epilepsy accounting for 107 of these.

The so-called "critical periods of life" account for 76 cases, puberty accounting for 37, and senility for 28 of these.

Current Topics.

I M S FUTURE PROSPECTS

The latest list of successful candidates for the I M S shows clearly that the service is still unpopular in the schools and that competition has hugely disappeared.

It is a pity that the medical despatches which Sri Pandey Lukis was instrumental in getting published recently were not published several months ago. Apart from the openings offered by "panal servitude" and the high salaries offered to *locum tenentes* there is still a distaste for the Indian Service among the best students of the schools, and nothing but a clear and definite pronouncement of improved future prospects will get rid of the present reluctance of the best students, the only men we want, to join.

The medical despatches have clearly shown the harm that has been done to the service, at the same time they clearly and emphatically show

that the scheme of starving the service has totally failed and must be added to the list of Lord Morley's many political failures. It will take time to undo the harm done, but we are glad to see that the public press has taken wide notice of these despatches, and, doubtless, much more attention would have been given to the statements made therein had not the whole world's eyes been riveted on the great European war.

When this great war is over and when all that is implied in Kaiserism or militarism has been laid low there will doubtless be scores of young medical men able, fit, and willing to join the Indian Medical Service, and we hope that it will, before the end of the war, be found possible to make such a pronouncement about the future prospects of the service that will attract the men we want and the class of men we used to get. In a dozen ways the present Director-General has done much for the service, and we hope that before his term of office shall have expired the tide will have turned, and that he will have the satisfaction of seeing brisk competition and plenty of good men eager and willing to enter the fine old service.

SOME COMPARATIVE INSANITY STATISTICS

It is a well-known fact that only a very minute proportion of the insane population of India is to be found in the few lunatic asylums in this country. The numbers admitted in 1912 for example was only 1,847, an increase, however, over the 5 years average of 1,610. The average daily population in that year was only 6,158 of whom 4,877 were males and 1,281 females.

In the same year (1912) the number of lunatics admitted in each Province is herewith given and the ratio per lakh of the population.—

	Admissions.
Bombay, admitted 129, or a ratio per lakh of population	= .02
U P 406	= .009
Bengal 265	= .006
Madras 260	= .01
Punjab 218	= .01
Burma 178	= .01
G P 71	= .005
Bihai & Orissa 72	= .002

The total average annual expenditure, which is almost entirely borne by the State, is about 10 lakhs, or say £66,000 sterling.

Remembering that out of the 315 millions in India there are little over 6,000 lunatics under treatment in Indian asylums, we may contrast with this a few figures from other countries. (See table below.)

In the 67th Report of the Commissioners in Lunacy (1913) we find that in England 138,877 lunatics were under treatment, or 370 per lakh of the estimated population, in Scotland there were 19,188 lunatics of which the Board of Commissioners had official cognizance or just over 400 per lakh of the estimated population. In Ireland in 1912 we find there were 24,839 insane under care or in the proportion of 567 per lakh of the

estimated population.* In the United States the figures are (in 1910) 187,000 lunatics, or 204 per lakh of the population.

When these figures are contrasted with the 6,000 (more or less) lunatics in asylums in India it will be seen how extremely few insane are under treatment in this country.

We have said above that the total cost for the support and treatment of lunatics in All-India has been reckoned in a Government Statistical Return as about 10 lakhs, or £66,000, per annum. In England we find the Commissioners' estimate of the total expenditure on the County and Borough Asylums to be well over 3½ millions sterling. In 1912 the maintenance of lunatics in Ireland cost £498,000, or just short of half a million and in Scotland £427,000. The average cost per patient in Scotland is put at £26, in Ireland at £29, and in England at £25, and in India only about £9 10s per head, per annum.

We may now make some remarks on the aetiological factors or assigned causes of cases admitted to asylums. In England we find insane heredity and abuse of alcohol at the head of the list, next comes mental stress, then (*longo intervallo*) syphilis, senility, and epilepsy.

The Report of the English Commissioners shows the very considerable prevalence of a disease usually considered to be an incidence of tropical life, viz., dysentery. In 95 County and Borough asylums there were 1,155 cases of dysentery and 555 of what is called "infective enteritis or diarrhoea of uncertain origin," and dysentery was epidemic in 6 large asylums. It is noted as "surprising" that of 1,155 dysentery cases only 140 cases are reported as having a previous attack.

It is also stated "that the difficulties which underlie a correct understanding of outbreaks of dysentery and infective diarrhoea remain far from solved. The irregular distribution and incidence of these diseases, for which with our present knowledge it is difficult to assign adequate explanation, seem to demand special investigation."

The above remark if made in an Indian asylum or jail report would at once be met with a murmur of "insanitary conditions," but we know better.

Tuberculosis is also extremely common. The general death-rate in English asylums is given at from 8 to 9 per cent of daily average strength in England, 6 8 per cent in Ireland, and 9 8 in Scotland, which may be contrasted with an average rate in India of about 12 per cent—and in India we have to reckon with many tropical diseases unknown in the United Kingdom.

In another column we have discussed the rarity but undoubted existence of general paralysis among insane in India.

It is far otherwise in Europe. The Commissioners for Scotland discuss this disease at considerable length. Syphilis (they remark) is "an invariable if not constant precursor of the disease." While it is so rare in India that its existence till recently was an almost debated point it accounts for no less than 14 per cent of the asylum deaths in Scotland.

INSANES IN ASYLUMS IN INDIA[†]

PROVINCI	NUMBER OF INSANES REMAIN- ING IN THE ASYLUMS ON THE LAST DAY OF EACH OF THE YEARS			Population according to census of 1911
	Males	Females	Total	
Bengal	{ 1911 849	195	1,044	{ 15,453,077 (1 in 43,557)
	{ 1912 878	186	1,064	
	{ 1913 875	182	1,067	
Madras	{ 1911 562	195	757	{ 41,405,401 (1 in 51,700)
	{ 1912 555	200	755	
	{ 1913 557	203	755	
Bombay	{ 1911 511	218	1,029	{ 19,626,477 (1 in 18,000)
	{ 1912 533	200	1,012	
	{ 1913 551	235	1,089	
United Provinces	{ 1911 833	302	1,185	{ 47,182,044 (1 in 6,500)
	{ 1912 952	293	1,215	
	{ 1913 983	295	1,278	
Bihari and Orissa	{ 1911 190	42	232	{ 34,490,084 (1 in 12,300)
	{ 1912 215	39	251	
	{ 1913 240	41	281	
Punjab	{ 1911 537	131	668	{ 19,974,956 (1 in 4,900)
	{ 1912 549	143	683	
	{ 1913 571	156	727	
Burm	{ 1911 527	92	619	{ 12,115,217 (1 in 21,250)
	{ 1912 466	97	563	
	{ 1913 452	110	562	
Central Provinces and Berar	{ 1911 230	56	286	{ 13,916,308 (1 in 44,500)
	{ 1912 219	61	280	
	{ 1913 214	66	310	
Assam	{ 1911 191	38	223	{ 6,713,635 (1 in 25,821)
	{ 1912 186	13	229	
	{ 1913 212	48	260	
TOTAL	{ 1911 4,783	1,269	6,052	{ 244,194,917 (1 in 33,337)
	{ 1912 4,874	1,271	6,145	
	{ 1913 5,018	1,351	6,369	

* Statement showing the number of Insanes remaining in the Asylums of British India on the last day of each of the years 1911-13, also the population of each of the provinces according to census of 1911. For this table we are indebted to Mr. Findlay Shurra, Director of Statistics, Government of India.—ED.

† Including the population figures of the following provinces where there are no Asylums—

N W F Province	2,196,932
Baluchistan	414,412
Ajmer Mevaria	501,395
Coorg	174,976

[† The question of Asylum dysentery will be fully treated by Major Heffernan, I.M.S., in our next issue.—ED.]

* In England 1 in 276
In Scotland 1 in 246
In Ireland 1 in 176

THE CAVENDISH LECTURE ON THE CAUSES OF INSANITY

In the *Cavendish Lecture* delivered by Dr F W Mott on 19th June, 1911, he dealt with the causes of insanity and dwelt on the increase of insanity and feeble-mindedness and on the serious burden the maintenance of pauper lunatics had become to the ratepayers, e.g., he said the London County Council spent no less than £ of a million pound-sterling (over 112 lakhs of rupees) on pauper lunatics in one year or if the expenditure of the Metropolitan Asylums Board be added the total comes to 1 million per annum (150 lakhs). Asylums cost on the average £300 to £500 per bed (say 4,500 to 7,500 rupees per bed).

The first duty of a state is to prevent disease, second to cure disease and failing that to prolong life and relieve suffering. Among the great causes of insanity and especially of general palsy is syphilis, the spirochaetes have been discovered in the brains of 12 out of 70 general paralytics.

We cannot fully enter into the many questions raised in this Cavendish Lecture, but the following extracts will show Dr Mott's views —

"The Race Poisons in Relation to Degeneracy — Although mental deficiency is not limited to any social grade, and an idiot or imbecile may even sometimes crop up unexpectedly in a family in which both maternal and paternal stocks are apparently sound, yet as a rule it is the sediment of our large overcrowded cities and the rural districts where feeble-mindedness is most to be found 'Birds of a feather flock together,' and among the lower inefficient grades of society there will always be a tendency for people of feeble intelligence, weak will power, slender sagacity, and deficient moral sense to mate and breed. The social environment is necessarily bad and unhygienic, consequently they are very prone to be affected by the race poisons—syphilis, alcohol, and tuberculosis—which tend to an increase of the bodily and mental deficiency in the next generation. In this way it is possible that these race poisons may tend to weed out poor types, but it is also probable that they tend to produce poor types.

It may be a biological heresy, but it is firmly rooted in the minds of practising physicians that chronic saturation of the blood by the race poisons, specially when operating in successive generations, can *per se* cause degeneracy in healthy stocks by a pathological mutation of the germ plasm. Biologists may assert that one is assuming an acquired character can be inherited, and you must prove that the poison is not acting on the individual by reviving a latent neuropathic taint. I admit the great difficulties attending a proof that would satisfy some eminent authorities, still Galton himself admitted the possibility of continuous saturation of the blood by poisons modifying the germ plasm, and Professor Arthur Thomson in his work on heredity comes to this conclusion.

If we consider the matter from a physiological point of view it may be assumed that a chronic blood poisoning would disturb the biochemical interrelations of all the organs of the body, including the ductless glands and the sexual organs. It cannot be supposed that the continuous disturbance of the normal biochemical dynamics of so complex a mechanism can have no effect, after its operation in successive generations, upon the specific energy of the master tissues, germ cells and brain cells, seeing that they are supplied by the same blood and lymph as the rest of the organs and tissues of the body. My investigations of pedigrees of the insane and the feeble-

minded certainly support this conclusion. Many pedigree charts of defectives show a drunken mother or father, but particularly the former, with a family of healthy or comparatively healthy firstborn, then as the effects of the poison become intensified the later born children are either dying in infancy or mentally defective. Every effect owns a cause, and it seems reasonable to attribute degeneracy to specific nutritional deficiency of the germ cells about by environmental agencies as to call it spontaneous variation.

"Causes of Psychoses or True Insanity — Having thus given some consideration to the causes of mental defect and mental diseases with recognisable morphological defects or destruction of the organ of mind (ementia and dementia) I will pass on to the consideration of the causes of the true psychoses or disorders of mind, in which so far no adequate explanation by morphological changes in the brain exists.

The causes of these functional disorders fall into two groups (1) the toxic, and (2) the degenerative (neurotic), but, of course, the two conditions are more often than not combined. The toxic causes are (a) exogenous and (b) endogenous. The field of inquiry concerning the latter (endogenous) compared with the former (exogenous) is beset with many difficulties, because the source and mode of introduction of poisons from without can be ascertained, whereas the genesis of the endogenous poisons is much more obscure and complicated by the general disturbance of the biochemical harmony of the physiological interrelations of the organs of the body. Indeed, many of the pathological conditions, bodily and mental, which arise from the introduction of poisons into the body, especially when they are taken habitually, are due not only to the poisons introduced from without, but to microbial poisons and the toxic products caused by disorders of alimentation, of metabolism, and of inefficiency of elimination of waste products with the installation of a vicious circle.

Time does not permit of my dealing fully with the intoxication insanity brought about directly by alcohol and lead acting as principal factors. I may, however, remark that the characteristic true alcoholic psychosis (Korsakow psychosis), and regarded by Kraepelin as chronic delirium tremens, is not a common class of case in our asylums, and I have but seldom found cases in the *post mortem* room. Alcoholic insanity is more often transitory and the cases are intercepted in the infirmaries. Although alcoholism plays an important part in the degeneracy of a stock, yet as the sole cause or even the principal cause of a large proportion of admissions to asylums I am very sceptical, indeed, I have brought forth a mass of evidence, clinical, pathological, and statistical, to show that a relatively small quantity of alcohol, the quantity which is taken daily by many physicians, magistrates, and pillars of society generally without any apparent harmful effects, is quite sufficient to make a potential lunatic or epileptic antisocial, and thereby necessitates segregation."

"Insanity among Primitive Peoples Dementia Praecox — In primitive and semi-primitive people the animal instincts and passions naturally stand out in relief. Their ideas are limited to concrete sensations, and when they suffer with obsessions they are sensory in character. They are often particularly liable to hypnotic conditions and suggestion, owing to a lack of highest control and an environment of mysticism, superstition, and witchcraft the fear of natural phenomena, which they cannot explain, enters largely into their mentality. P C J van Biero, who has had a long experience at Lawang Asylum, Java, points out the difficulties of obtaining information regarding the prevalence of different forms of insanity among primitive and semi-primitive peoples, and of appraising the value of such accounts as exist by various writers, owing to their using a different nomenclature. Nevertheless, it appears that they suffer, although to a less extent and with a different colouring, the same forms of insanity, and apparently the primary dementia of adolescence, dementia praecox, is the commonest form.

Among these people it cannot be an effect of the non gratification of the sexual instincts, owing to failure of opportunity occasioned by social conditions, yet its appearance in individuals in early adolescence, who up to the time of puberty were normal, points to some intimate relation of the disease to the sexual functions. We know that this form of insanity is evidence in most cases of an ancestral neuropathic taint. In a large proportion of the cases of insane parents and offspring which I have collected I find the offspring are suffering with this form of insanity. In 80 per cent of the cases of dementia puerorum the onset occurs before 25. In cases where there are two or more members of the same co-fraternity suffering with insanity it is nearly always this form of insanity of adolescence, and it frequently terminates in dementia. It is noteworthy, too, that in a large proportion of cases the age of onset of the offspring of insane parents is the same or within a few years of the same. This corresponds to family nervous diseases. The sexes are about equally affected. Over pressure at school and college is often (I think erroneously) attributed as the essential cause of the disease, although I do not deny there is not infrequently a history of such over pressure. Again, masturbation is very common, so much so that it is thought to be the cause of the onset of the disease and of the anergic stupor that so commonly occurs in these cases, but it is more probable that this is a sign of the disease and not a cause.

Now it is very interesting to note that up to the time of puberty the majority of patients affected by dementia puerorum have been intelligent individuals and full of promise. Aschaffenbourg, cited by Christen, gives the following proportion per cent. of dementia puerorum: 27 men and 21 women were of an average intelligence prior to the onset, 55 males and 66 females were intellectually good and even remarkable, 18 males and 13 females presented a psychic development below the average without, however, being idiots or imbeciles. These and other statistics tend to show that there is not a congenital feeble mindedness but some germinal defect, possibly of durability of the sexual glands, which has a profound influence on the function of the brain, causing at first mental disorder, and lastly dementia. Had time permitted I should have liked to say something regarding maniacal depressive insanity and involutional melancholia.

Every case of insanity should be regarded as a biological problem, and it can only be solved by a full consideration of what the individual was born with and what has happened after birth."

THE DISCOVERY OF EMETIN

While all the world has acknowledged the great value of Sir Leonard Rogers' introduction of Emetin in the treatment of the presuppurative stage of liver abscess and in amoebic dysentery it is not claimed that he was the "only begetter" of this treatment. We recently called attention to the suggestion made but not followed up by Surgeon-General G F A Harris, when Civil Surgeon of Simla, and in the *Practitioner* (July 1914, p 4) Sir Dyce Duckwork, *Bart*, M.D., tells us of its use by the veteran Dr W S Eccles, formerly Medical Officer in Bombay of the G I P Railway. Dr Eccles used emetin freely and very successfully in half grain doses by the mouth in 1869.

Unfortunately Dr Eccles did not publish his results and his great discovery remained unknown and unused. The moral is that practitioners should publish their results, not prematurely but

when they have had experience of continued good results.

RESEARCH ON SPRUE.

The group of chronic intestinal diseases (variously called sprue, chronic diarrhoea, hill diarrhoea, white diarrhoea) is an all important cause of much ill health and invalidism, but far too little attention has been paid to them of recent years. Every year in one or other of our hill stations in India epidemics or at least a considerable prevalence of chronic bowel complaints are heard of, but of recent years next to no work has been done in elucidating the complaint or complaints.

Surely this is an important enough subject to be taken up by the bacteriological department and the Scientific Bureau. Even papers in the medical press are few and rare. Recently however we note two, one a short paper by Sir Leonard Rogers (*Lancet*, June 6th, 1911) on two cases of sprue treated by mouth streptococcal vaccines combined with hypodermics of emetin and another paper by Dr P H Bain, who has been studying the subject in Ceylon and whose tentative conclusions we quote below —

Evidence against regarding Sprue as a Blastomycotic Infection

- (1) The thrush fungus (*Monilia albicans*) is a terminal, though uncommon, infection in other chronic wasting diseases, such as phthisis, cancer, diabetes, &c.
- (2) General infections of the alimentary canal with this fungus have been reported in temperate zones.
- (3) If the geographical distribution of sprue be eventually found to correspond with that of other typical tropical diseases, such a fact alone is in favour of a protozoal, rather than of a fungoid or bacterial, origin of the disease.

CONCLUSIONS

- (1) Sprue is a specific disease of tropical and subtropical countries, though it is possible that cases occasionally originate in temperate zones.
- (2) It is a disease prevalent in Ceylon, especially amongst the Europeans, but contrary to the opinion hitherto held, it may also occur in the native, irrespective of race or mode of life.
- (3) This fact, together with the occurrence of the disease in people closely associated, suggests a local influence or some communication from man to man.
- (4) Sprue is a variable disease, it may occur in a mild or in a particularly virulent form, and in common with many other serious diseases, it is sometimes liable to sudden remissions and latent periods.
- (5) There is evidence that the disease may occur as distinct and specific clinical forms according to the portion of the alimentary canal attacked.
- (6) Researches on the composition of the stools point either to a complete absence or insufficiency of the intestinal digestive ferments.
- (7) Researches on the blood and urine are in favour of regarding sprue as an alimentary toxæmia.
- (8) The pathological findings are also in favour of this supposition and point to an infection with the thrush fungus (*Monilia albicans*) as being the organism concerned in its production, the evidence is, on the whole, in favour of rather than opposed to this view.

In the Philippine Journal of Science (February 1914), Dr M A Barber shows that cockroaches which are very common in dwelling-houses

in Manila at all seasons and which are voracious feeders on all kinds of organic matter can and do carry with him the vibrios of Asiatic cholera. The cockroaches experimented on was the species *Periplaneta Americana*. Dr Barber sums up as follows —

"Cockroaches which have fed on human cholera faeces may harbour cholera vibrios in their intestines, and these may appear in enormous numbers in the insects' faeces for at least two days after the insects have fed, and may occur in smaller numbers seventy-nine hours after ingestion. By means of both faeces and vomit, cockroaches may act as carriers of cholera to human food. Cholera vibrios in cockroach faeces will survive on human food at least sixteen hours after discharge from the insect, and cholera vibrios in human faeces will survive, in competition with numerous other bacteria, on food at least four days. There is no loss of virulence for guinea-pigs in cholera vibrios after twenty-nine hours in the intestine of the cockroach. Cholera vibrios may be found in the bodies of ants at least eight hours after they have ingested cholera cultures or human faeces from cholera patients."

THE seventh edition of the Prospectus of the London School of Tropical Medicine is very full and complete and gives a large amount of information which will be very useful to intending post-graduate students.

SPECIAL ARTICLE

THE STATE MEDICAL FACULTY

THE following important paper show the great step forward taken by the Government of Bengal toward establishing a high standard of medical education in that Presidency. We may safely assume that the example of Bombay and Bengal will soon be followed all over India—and that a few years shall see the passing of an all India Medical Bill or the establishment of an all India Medical Council. Meantime the following scheme stands by itself and it appears to us to be a very satisfactory way of solving an admitted difficulty. Able and ambitious students will still aim at the University degree, but for the average man another and less high standard is required, and we may hope that the University will so keep up its high standard for its degrees that the state of affairs will *mutatis mutandis* resemble that of London, where the London M.B. is admittedly only for the brilliant student while the great majority do not aspire to more than the M.R.C.S. and L.R.C.P. The new State Faculty in Calcutta will thus correspond to the Conjoint Board, and in addition it will give its License to the men who now enter Government service under the title of Sub-Assistant Surgeon. The three diplomas will be Fellowship (F.S.M.F.), Membership (M.S.M.F.) and License (L.S.M.F.), and we wish the new scheme all success. The papers follow —

"In 1906 the Calcutta University decided to discontinue the examination for the License in Medicine and

Surgery which had been held since 1861 and to restrict the functions of the University to the examinations for the degrees of M.B., M.D., and M.O. This decision was formed after an exhaustive enquiry had been made into medical education throughout India by Surgeon General Sir G. Boniford, with whose recommendations practically every University in India concurred. The last L.M.S. Examination was therefore held in 1911, though the failed students were allowed to appear up to 1913, but it soon became evident that while it is desirable that the University should encourage a high standard of medical education by putting before its students only the highest form of qualification, there is still room for a half mark or license to practise intermediate between this high qualification and the certificate given at the Government medical schools. In England there are many degrees of qualifications below the highest, and it was realised that the abolition of the L.M.S. Examination must result either in lowering the standard of the M.B., or in shutting out a considerable body of candidates who, while unable to attain to the highest qualifications, are yet above the standard of those who pass out from the Government medical schools and are quite capable of profiting by a wider course of training than that prescribed for those schools.

2 To meet this situation one possible alternative was to reverse the decision of the University in 1906 and reinstitute the L.M.S. Examination, but the reasons which led to that decision have still as much force as ever, and no University in England or on the Continent concerns itself with the grant of qualifications in medicine and surgery lower than a degree. The Governor in Council has therefore decided that the proper course is to establish a separate body to be called 'The State Medical Faculty,' which shall examine and certify to the qualifications of those medical students who are unable to attain to the high standard required for the M.B. degree. An additional advantage of this course will be the possibility of standardising the examination of candidates from the Government medical schools and from those private medical schools whose equipment and training may justify them in aspiring to a registrable qualification for their students.

3 The Bengal Medical Act which was passed last April has conferred upon the Bengal Council of Medical Registration the duties of general supervision over the interests of the medical profession and the progress of medical education, and it rests with that body to decide when the training and equipment of a school or college are such as to justify the grant of a registrable qualification to its successful students. It is undesirable that the functions of this Council, which is largely elective and is the first step towards self-government in the profession, should be encroached upon by any other body, and the responsibilities of the State Medical Faculty will therefore be confined to arranging for the examination of students from colleges and schools which have been approved for this purpose by the Council of Medical Registration. The State Medical Faculty will grant a diploma of membership and a license, the former corresponding to the L.M.S. and the latter to the certificate given by the Government medical schools, and it is expected that the Council of Medical Registration will recognise these qualifications as registrable under section 18 (a) of the Bengal Medical Act and thus avoid the multiplicity of titles and qualifications which would otherwise be necessary when private schools and colleges are approved by the Council. As the State Medical Faculty will be purely an examining body and it is desirable that their diploma and license should have the weight of Government authority, the Governing Body will be appointed by His Excellency in Council.

4 The statutes and bye laws of the State Medical Faculty, which is hereby constituted, are published below for general information. —

By order of the Governor in Council"

STATUTES

1 THERE shall be established a State Medical Faculty in Bengal for the purpose of enabling persons who desire to practice Medicine, Surgery, and Midwifery according to Western methods after proper teaching and examination to receive a diploma or license testifying to their adequate training and proficiency in these sciences.

Constitution of the Faculty

2 The State Medical Faculty shall consist of—

- (a) A governing body
- (b) Fellows
- (c) Members
- (d) Licentiates

3 The governing body shall consist of a President and eleven members, who shall be appointed by the Governor in Council and hold office for a term of two years. The Vice President shall be elected by the members of the governing body from among their own number, he shall hold office for one year, but shall be eligible for re-election.

4 The Fellows shall be limited to 50 in number and ordinarily shall be elected *honoris causa* by the governing body, but on the constitution of the Faculty His Excellency the Governor in Council may nominate not more than 20 such Fellows.

5 Members and Licentiates shall be elected by the governing body after examination.

Duties of the Governing Body

6 The governing body shall arrange to hold at regular intervals examinations in all the recognised subjects of a complete medical curriculum for the admission of Members and Licentiates to the Faculty. The preliminary qualifications, course of study and subjects of examination shall be as set forth in the schedule attached to these statutes which may be altered from time to time by the Governor in Council after due notice in the *Calcutta Gazette*.

7. Only students, who undergo a course of study in medical science in Government medical schools or colleges or in schools or colleges which have been recognised in this behalf by the Council of Medical Registration shall be allowed to present themselves for examination for membership and licentiateship of the Faculty.

Provided that any person who has undergone a full course of training in any medical school or college and has obtained a certificate to that effect from the head of such school or college may, at the discretion of the Governor in Council, be granted a certificate enabling him to appear at the final examination for the licentiateship within two years from the constitution of the Faculty, and on his appearing at such examination and satisfying the Examiners, he shall be deemed eligible for election as a Licentiate of the Faculty.

Admission of Women

8 Women may be admitted as Licentiates, Members, and Fellows of the State Medical Faculty, on the same terms and conditions as men and shall have the same rights and privileges.

SCHEDULE

[“Recognised” means recognised for the purpose by the Bengal Council of Medical Registration.]

1.—EXAMINATION FOR MEMBERSHIP OF THE STATE MEDICAL FACULTY

1 The examination shall consist of three parts—
 (a) The Primary or Preliminary Scientific Examination
 (b) The Intermediate Examination
 (c) The Final or Pass Examination
 Each of these examinations shall be held twice a year.

and shall consist of three parts—written, oral, and practical.

2 A candidate wishing to appear at the Primary or Preliminary Scientific Examination must furnish certificates—

(a) that he has passed the Matriculation or any higher examination in Arts or Science of an Indian University. The School Final Examination for Indian Schools and the High School or Scholarship Examination for European Schools will be accepted as the equivalent of the Matriculation Examination,

(b) that subsequent to passing the Matriculation he has attended the following courses of lectures at a recognised medical school or college—

(1) Two courses of 20 lectures each in Chemistry
 (2) Two courses of 20 lectures each in Elementary Physics, including practical instruction.

(3) One course of 40 lectures in Biology and 40 attendances at Practical Biology

(4) One course of practical chemical exercises in testing the nature of ordinary poisons and in the examination of urine and urinary deposits (30 attendances)

(c) that he is of good character. This certificate must be signed by the head of the medical school or college in which the candidate is receiving his training.

3 A candidate wishing to appear at the Intermediate Examination must furnish certificates—

(a) that he has passed the Primary or Preliminary Scientific Examination at least one academical year previously,

(b) that he has attended the following course of lectures at a recognised medical college or school—

(i) Two courses of 70 lectures in Descriptive and Surgical Anatomy

(ii) Forty lectures in Materia Medica

(iii) Forty lectures in General Anatomy and Physiology

(c) that he has studied practical Pharmacy for three months and acquired a practical knowledge of the preparation and compounding of medicines,

(d) that he has dissected during two winter terms of six months and completed the dissection of one whole body.

Provided that—

(1) A passed student of a recognised school of medicine if recommended by the governing body of the State Medical Faculty for distinguished merit, may be admitted to a combined Primary and Intermediate Examination on producing certificates—

(a) that he has passed the Matriculation Examination of a University or its equivalent,

(b) that he has passed the Final Examination of a Government or recognised medical school with marked distinction,

(c) that he has subsequently been engaged for one year in the study of medicine in a recognised medical college or school and attended an additional course of lectures in each of the following subjects—

Botany	Anatomy
Chemistry	Physiology
Materia Medica, including practical Pharmacy	

(2) A female student who has attended classes and obtained a certificate in Medicine, Surgery, and Midwifery in a recognised medical school or college may, if recommended by the governing body of the Faculty, be admitted to a combined Primary and Intermediate Examination on the production of certificates—

(a) that she has passed the Matriculation Examination or its equivalent,

(b) that she has attended in a recognised medical college or school an additional course of lectures in each of the following subjects—

Botany	Anatomy
Chemistry	Physiology
Materia Medica, including practical Pharmacy	

4 A candidate wishing to appear at the Final or Pass Examination must furnish certificates —

(a) that he has passed the Intermediate Examination or the first M.B. of a recognised University at least two academical years previously,

(b) that he has subsequently attended the following courses of lectures at a recognised college or school —

(i) Two courses of 70 lectures each in Medicine (including Hygiene), Surgery, Midwifery, and Gynaecology.

(ii) One course of 40 lectures in general Pathology, including Morbid Anatomy.

(iii) One course of 40 lectures in Medical Jurisprudence.

(iv) One course of 25 lectures in Diseases of the Eye.

(c) that subsequent to passing the Intermediate or first M.B. he has attended a course of operative surgery of not less than 30 demonstrations during a winter session,

(d) that he has performed six *post mortem* examinations and regularly attended one course of practical demonstration in the dead house.

(e) that he has conducted at least six labours,

(f) that he has attended hospital and dispensary practice during the last three academical years, viz —

Three months attendance at the outdoor surgical and three months at the outdoor medical department of a recognised hospital.

Six months at the surgical practice of a recognised hospital, with lectures on clinical surgery during such attendance.

Six months at the medical practice of a recognised hospital with lectures on clinical medicine during such attendance,

Three months at the practice of an eye infirmary.

(g) that he has drawn up with his own hand twelve medical and twelve surgical cases during his period of service as clinical clerk or dresser,

(h) that his character and general conduct during his attendance at the medical college or school has been good.

5 The subjects in each of the three examinations shall be as follows —

Primary or Preliminary Scientific.

Inorganic Chemistry
Elementary Physics
Biology
Practical Chemistry

The Intermediate Examination.

Anatomy
Physiology
Materia Medica and Pharmacology
Practical Pharmacy

The Final or Pass Examination.

Medicine
Surgery
Midwifery
General Pathology
Medical Jurisprudence
Hygiene

6 A candidate failing in one or more subjects at any of these examinations may appear at a subsequent examination on payment of a fresh fee and on furnishing a certificate that since his last examination he has attended a regular course of instruction in the subject or subjects in which he failed.

7 The fees for the examination for the diploma of membership shall be —

	Rs.
Primary or Preliminary Scientific	25
Intermediate	25
Final or Pass	50

Provided that when a candidate is allowed to take a combined Primary and Intermediate the fee shall be

Rs 50 in the case of a male student and Rs 35 in the case of a female student

II — EXAMINATION FOR LICENTIATESHIP OF THE STATE MEDICAL FACULTY

1 The examination shall be in two parts —

(a) First Professional or Junior Examination to be held at the end of the second session of the course

(b) Second Professional or Pass Examination to be held at the end of the fourth session of the course

Each examination shall be held twice a year and shall consist of three parts — written, oral, and practical

2 Candidates wishing to appear at the first Professional Examination must furnish —

(a) a certificate of having passed the Matriculation Examination or any higher examination in Arts or Science of an Indian University. The School Final Examination for Indian schools and the High School and Scholarship Examination for European schools will be accepted as the equivalent of the Matriculation Examination.

Provided that in the case of candidates who, at the date of the institution of the Faculty, have already been received as students of a recognised medical school and are unable to furnish the certificate required above, a certificate from the Superintendent of the school that they were admitted to the school under the rules at the time in force will be accepted.

(b) a certificate of character from the head of the medical college or school in which the candidate is a student,

(c) a certificate that the candidate is not under 18,

(d) a certificate that the candidate has studied for two academical years at a recognised medical school or college.

3 Candidates before appearing at the Second or Pass Examination must produce a certificate that they have passed the First or Junior Examination and have completed a full course of at least four years' study at a recognised medical school or college.

4 The course of study for the licentiateship shall be —

FIRST YEAR	THIRD YEAR
Anatomy, including dissections Physiology, Chemistry and Physics, Materia Medica and Practical Pharmacy	Medicine and Therapeutics, Surgery, Medical Jurisprudence, Pathology, Midwifery and Gynaecology, Hygiene, in and out patient practice, Minor Surgery

SECOND YEAR	FOURTH YEAR
Anatomy, including dissections Physiology, Chemistry and Physics, Materia Medica and Practical Pharmacy	Medicine and Therapeutics, Surgery, Medical Jurisprudence, Pathology, Midwifery and Gynaecology, Hygiene, Vaccination, In and out patient practice

Each candidate will be required to have dissected the whole human body at least once during his first two years of study and to have assisted at not less than six *post-mortem* examinations during the third and fourth years of study.

5 The subjects for examination shall be the following —

First or Junior Examination

Anatomy
Physiology
Materia Medica and Pharmacy
Chemistry and Physics

Second or Final Examination

Medicine, including Medical Pathology and Therapeutics
Surgery, including Surgical Pathology and Operative Surgery
Medical Jurisprudence
Midwifery and Gynaecology
Hygiene and Vaccination.

6 Students who fail in one or more subjects at either examination shall, on the recommendation of the Superintendent of the medical school in which they received their training and subject to the approval of the governing body of the State Medical Faculty, be permitted to appear at the next examination for examination in the subject or subjects in which they failed.

7 The fees for the examinations for the Licentiate ship shall be—

	Rs.
(1) For the First Professional or Junior Examination	15
(2) For the second Professional and Final Examination	30

BYE LAWS OF THE STATE MEDICAL FACULTY

SECTION 1—COMMON SEAL

The seal shall be in the custody of the President or the Vice President.

The seal shall not be affixed to any instrument except in the presence of the President or the Vice President, or, in their absence, in the presence of the senior member of the governing body.

SECTION 2—BYE LAWS

The making, altering or abrogating any bye law shall be in the following manner—

A written formula for any proposed bye law, or for altering, or for abrogating any existing bye law, being delivered by a member of the governing body to the President, or presiding member, at any meeting of the governing body, shall thereupon be read, and, if seconded, it shall be referred to a committee of members of the governing body, who shall be immediately elected with direction to report at the next or succeeding meeting of the governing body. On the said committee presenting the report, the governing body shall take it into consideration at the next meeting and shall then or at a subsequent meeting ballot for the acceptance or rejection of the said formula, and if it be approved by a majority of two thirds of the said governing body, the same shall be ordained and signed by the members present.

SECTION 3—MEETING OF GOVERNING BODY

1 An ordinary meeting of the governing body shall be held upon the third Monday in January, March, July, and November in every year, if the same Monday be a Bank holiday, the meeting shall be held on the following working day.

2 The President may call a special meeting of the governing body whenever he shall judge the same to be necessary.

3 The President shall call a special meeting of the governing body upon a requisition signed by six or more members of the governing body.

4 Upon the demand of three members present at a meeting any question under consideration by the governing body shall be decided by ballot.

5 At least six members shall be necessary to form a quorum at any meeting of the governing body.

SECTION 4—ELECTION OF EXAMINERS

The governing body shall appoint examiners to examine candidates for membership or licentiateship of the State Medical Faculty, and shall pay them such remuneration as the governing body, with the sanction of the Local Government, may determine. The examiners shall be appointed for a term of two years.

The governing body shall draw up and publish for general information rules for the conduct of the examination and a detailed syllabus of the subjects.

SECTION 5—ADMISSION TO THE FELLOWSHIP

1 The fee to be paid for admission to the fellowship shall be Rs. 300 over and above all charges, if any, for

stamps, and shall be payable in such manner as the governing body shall from time to time direct.

2 Every Fellow of the State Medical Faculty shall, prior to his admission as a fellow, subscribe his name to a copy of the bye laws in testimony of having engaged himself to the observance thereof.

3 The diploma of a Fellow shall be in such form as the governing body may from time to time direct.

4 The seal of the State Medical Faculty shall be affixed to the diploma of every Fellow.

SECTION 6—ELECTION TO MEMBERSHIP AND LICENTIATESHIP

1 The election to membership and licentiateship of the Faculty shall be held by the governing body after considering the report of the examiners, but no person under the age of 21 years shall be eligible for the membership and no person under the age of 20 for the licentiateship.

2 Every person elected a member or licentiate of the Faculty shall be given a diploma. The diploma shall be in such form as the governing body may from time to time judge proper.

3 The seal of the State Medical Faculty shall be affixed to the diploma of every member or licentiate of the State Medical Faculty.

4 Every person, prior to his admission as a member or a licentiate of the State Medical Faculty shall, in the presence of the President, Vice President, or member of the governing body of the State Medical Faculty, make and subscribe his name to the following declaration—

"I, I B., do solemnly and sincerely declare that while a member (or a licentiate) of the State Medical Faculty I will observe the bye laws thereof, that I will demean myself honourably in the practice of my profession, and to the utmost of my power maintain the dignity and welfare of the State Medical Faculty."

5 Every person prior to his admission as a member or a licentiate shall subscribe his name to a copy of the bye laws of the State Medical Faculty in testimony of his having engaged himself to the observance thereof.

6 No member or licentiate of the State Medical Faculty shall allow his name to be connected with any advertisement for personal gain, or publication of an indecent or immoral nature.

7 No member or licentiate of the State Medical Faculty shall practise or profess to practise by the use of, or according to, any secret remedy or method of treatment, or shall allow his name to be connected with advertisements for the sale of any secret remedy, or for practice by the use of any secret remedy or method of treatment, or shall connect himself in partnership or otherwise, or continue in connection with any person practising by means of, or advertising the sale of, any secret remedy.

8 No member or licentiate of the State Medical Faculty shall be guilty of deception or other immorality in the practice of his profession, or shall in any other way conduct himself inconsistently with the honour and decorum which becomes his position in the State Medical Faculty.

SECTION 7—REMOVAL OF FELLOWS AND MEMBERS AND LICENTIATES

1 If the name of any Fellow, Member, or Licentiate be removed by due authority from any authorised medical register, he shall ipso facto cease to be a Fellow, Member, or Licentiate of the State Medical Faculty.

2 Any Fellow, Member, or Licentiate, who shall cease to belong to the Faculty in accordance with the previous bye law, shall thereby forfeit all his rights and privileges as a Fellow, Member, or Licentiate of the State Medical Faculty and his diplomas shall thereupon be void and shall become the property of the State Medical Faculty, and be delivered up by such Fellow, Member, or Licentiate to the State Medical Faculty on demand.

**SECTION 8—RESIGNATION AND RELEASE OF FELLOWS,
MEMBERS, AND LICENTIATES**

Any Fellow, Member, or Licentiate of the State Medical Faculty, desirous of ceasing to be a Fellow, Member, or Licentiate thereof, shall tender his resignation to the governing body.

SECTION 9—CERTIFICATE OF DIPLOMA

A certificate that a diploma has been obtained shall not be granted to or for any person whomsoever without the authority of the governing body and for which certificate Rs 25 shall be paid over and above all charges of stamps, unless it shall appear to the governing body that the original diploma has been destroyed or irretrievably lost by fire, shipwreck, or other accident, in which case the fee of Rs 25 or any part thereof, as the governing body may think fit, may be remitted.

SECTION 10—TREASURERS AND SECRETARY

1 The governing body shall appoint a Secretary, who shall receive such salary or honorarium as the governing body may decide.

2 The President and Vice President for the time being shall be joint Treasurers of the State Medical Faculty.

3 All payments and contributions shall be made to the President or Vice President. All drafts on this account shall be signed by the Vice President and the Secretary.

4 The accounts of the State Medical Faculty shall be audited at least once in each year, at such date or dates as the governing body shall direct, by an auditor or auditors to be nominated by the governing body.

NOTIFICATION

No 2546 Medl.—The 11th August 1914.—In exercise of the power conferred by Article 3 of the Statutes of the Bengal State Medical Faculty, the Governor in Council is pleased to appoint the following gentlemen to be the governing body of the said Faculty, namely—

PRESIDENT

Surgeon General G F A Harris, C.S.I., I.M.S., M.D. (Durham), F.R.C.P. (Lond.), Surgeon General with the Government of Bengal.

MEMBERS

Lieutenant Colonel C R M Green, I.M.S., F.R.C.S. (Eng.), D.P.M. (Camb.), M.D. (Durh.), Professor of Midwifery, Medical College, and Obstetric Physician and Surgeon, Eden Hospital, Calcutta.

Lieutenant Colonel J T Calvert, I.M.S., M.B. (Lond.), M.R.C.P. (Lond.), D.P.H. (Camb.), Principal and Professor of Medicine, Medical College, Calcutta, and 1st Physician, College Hospital.

Lieutenant Colonel C R Stevens, I.M.S., M.D. (Lond.), F.R.C.S. (Eng.), Professor of Clinical and Operative Surgery, Medical College, Calcutta, and Surgeon to the College Hospital.

Lieutenant-Colonel Sir Leonard Rogers, K.T., C.I.E., I.M.S., F.R.C.P., F.R.C.S. (Eng.), M.R.C.P. (Lond.), M.D. (Lond.), Professor of Pathology, Medical College, and Bacteriologist to Government.

Lieutenant Colonel A R S Anderson, I.M.S., M.B., D.P.M., F.R.S., Civil Surgeon, Dacca.

Major R P. Wilson, I.M.S., F.R.C.S. (Eng.), D.P.H. (Camb.), Superintendent, Campbell Medical School and Hospital.

Rai Upendra Nath Brahmachari Bahadur, M.D., Teacher of Medicine, Campbell Medical School and Hospital.

Rai Koilash Chunder Bose Bahadur, C.I.E.

Dr Suresh Prosad Sabadlikar, M.D.

Mr M N Banerjee, M.R.C.S. (Eng.)

Assistant Surgeon Hem Chandra Sarkar, Teacher of Medicine, Chemistry, and Physics, Dacca Medical School.

ANNUAL REPORTS

LUNATIC ASYLUMS

BOMBAY

THERE were till recently eight asylums in Bombay, all of them small, except the Central Asylum at Yeravda, viz., Colaba, Naupada, Ratnagiri, Poona, Dharwad, Ahmedabad, Hyderabad, and Yeravda Central.

The Colaba Asylum giving the small, very small, floor space of only 50 sq ft per patient has accommodation for 90 Europeans (70 m, 20 f) and 104 males and 64 females. The maximum number confined was only Europeans 18 males and 15 females and Indians 77 and 43.

The capacity of the Narotamdas Madhavdas Lunatic Asylum, Naupada, is, at 140 superficial feet per paying patient, and at 80 superficial feet per pauper patient, for 198 males and 42 females, the maximum number of lunatics confined on any one night was 209 males and 43 females.

The capacity of the Ratnagiri Lunatic Asylum is, at 50 superficial feet per patient, for 106 males and 26 females, the maximum number of lunatics confined on any one night was 118 males and 32 females.

The capacity of the Poona Lunatic Asylum is, at 50 superficial feet per patient, for 103 males and 24 females, the maximum number of lunatics confined on any one night was 109 males and 23 females.

The capacity of the Dharwad Lunatic Asylum is, at 80 superficial feet per patient, for 77 males and 30 females, the maximum number of lunatics confined on any one night was 82 males and 32 females.

The capacity of the Ahmedabad Lunatic Asylum is, at 64 superficial feet per patient, for 90 males and 18 females and at 80 superficial feet per patient for 27 males and 13 females, the maximum number of lunatics confined on any one night was 124 males and 24 females.

The capacity of the Hyderabad Lunatic Asylum is, at 74 and 70 superficial feet per patient, for 159 males and 17 females, respectively, the maximum number of lunatics confined on any one night was 149 males and 20 females.

The capacity of the Central Lunatic Asylum, Yeravda, is, at 110 superficial feet per patient for 112 Europeans—77 males and 35 females and for 274 Indians—199 males and 75 females, the maximum number of European lunatics confined on any one night was 25 males and 18 females and that of Indian lunatics was 224 males and 74 females.

The New Central Asylum was only completed in 1913 at a cost of over 10 lakhs—as a result the asylums at Colaba and at Poona were closed. It is a pity a new Central Asylum was built on such a small scale, as the new accommodation amounts to 276 males and 110 females or 386 against 385 males, females, and European accommodation provided in the old and obsolete asylums. The net gain is therefore nil as regards accommodation, though in every other way the gain has been great. The total population of the asylums has only been 1,450, and the daily average strength only 1,105 (871 males and 233 females) in the whole Presidency.

Of the total number of inmates treated during the year 137 were discharged cured against 128 in 1912 and 101 inmates were transferred to the care of friends.

against 108 in 1912. Of those transferred under this head 75 had improved and 29 had not improved while under treatment.

Of the 14 insane discharged "otherwise" 2 were transferred to other asylums, 6 escaped, 5 were removed to the non criminal list and 1 was sent for trial.

Sickness

The daily average of sick in 1913 was 621 as compared with 398 in 1912. The increase was due to the large number of admissions at Yeravda Asylum which gave a daily average of 247. This was mainly due to admission for malaria (19), tubercular diseases (10), and bowel complaints (17). The general health of insane was satisfactory with the exception of those at Yeravda, Naupada, and Hyderabad. At Naupada Asylum the general health was fair. The number of admissions into hospital fell from 136 (in 1912) to 63 but dysentery and diarrhoea are still too prevalent. At the Hyderabad Asylum malaria fevers and cachexia were prevalent. There was no outbreak of epidemic disease in any asylum.

Mortality

The mortality was low as compared with the previous year. There were 106 deaths against 160 in 1912. The ratio of deaths to the daily average strength was 9.6 per cent against 15.3 per cent in 1912. There was a marked decrease at Naupada, the mortality being 16.1 per cent against 30.4 per cent. Of the total number of deaths in all the asylums 31 or 29.25 per cent were due to tuberculosis. Of these 10 deaths occurred at Naupada, 5 at Yeravda, 4 at Poona, 3 each at Colaba, Hyderabad and Ratnagiri, 2 at Dharwad and 1 at Ahmedabad. Diarrhoea and dysentery were responsible for 28 deaths, the largest number of cases having occurred at Naupada.

PATNA

Pending the building of the much discussed and oft deferred central asylum at Ranchi the asylum at Patna is the only one for the new Province of Bihar and Orissa—on this point Colonel F. J. Drury, the Inspector-General, remarks—

"Many improvements were effected during the year under report to make the asylum suitable for the needs of this Province. Besides these other works are in progress, and the administrative approval of Government has been accorded to others for which detailed plans and estimates are being prepared. Short mention of these works is made below. The list is by no means extravagant and only includes urgent requirements, as it has been decided not to spend on this asylum more than is absolutely necessary for present needs, in view of the proposed construction of a central asylum for Indians at Ranchi in the near future. The plans and estimates of the proposed central asylum will, it is understood, shortly be submitted for the approval of the Government of India and the work will be undertaken as soon as sanction is received."

The capacity of the Patna Lunatic Asylum was increased last year from 262 to 306 by the construction of a new sleeping ward for 40 non criminal male lunatics and of 4 cells for dangerous lunatics. The inevitable overcrowding which would otherwise have occurred owing to the fact that the maximum number confined on one night during the last year was 290 against 261 in 1912 was thus avoided. There was, however, some difficulty as regards the accommodation for criminal males. The daily average strength of this class of lunatics was 100.43 against 90, the capacity of the criminal wards. The overcrowding did not, however, produce any evil result as the ventilation in the wards is good. Other important works completed during the last year were quarters for the Sub Assistant Surgeon attached to the asylum, the construction of a cooling tank for drinking water near

the boiler, closing of the openings of the workshop for the lunatics with wire netted frames, etc."

As in every part of India a good class of men to act as keepers or warders is hard to obtain, and suitable men now-a-days will not be got on the pay of 7 to 10 rupees per month, and it is useless to expect on that rate of pay to get anything but the rejections of the Police and Jail Departments. The wonder to us is that the increased staff sanctioned were obtained. European lunatics are still sent to the fair from satisfactory asylum at Calcutta. It is extremely desirable that the scheme for a European Asylum in the eminently suitable climate of Ranchi should be built and this work costing over 13 lakhs has actually been begun.

"The total new admissions during the year were 85 against 69 in 1912—the cause of the increase is obvious. Of these, 36 were criminals, 32 males and 4 females, and 49 were non criminals, 41 males and 8 females. The daily average strength was 275.08 against 246.30 in 1912. The total number discharged cured was 21 against 24 in 1912. The difference is small. There were 2 escapes—one a criminal and the other a non criminal. The non criminal was recaptured and the warders, through whose negligence the escape was possible, were punished with fines. The criminal is still at large. The jamadar who was mainly at fault in not providing a proper guard over this lunatic was punished with a fine. The overseer also was given a warning. The number of sick in the hospital was 281 against 182 in 1912. The increase is attributed to the following causes increased number of lunatics and bad health and advanced age of the new admissions. There was also another factor at work. The major portion of the asylum grounds and the floors of some of the barracks were under water for some days during the floods. Another cause which is also to some extent responsible for the increased number of sick was the delay which occurred in fixing up a new pump. The drinking water had to be obtained from an inferior source. The number of deaths also was more than that in the previous year, the figures being 41 (including a case of homicidal strangulation) against 26 in 1912. The proportion per cent of deaths to daily average strength was 14.90 and the death rate per mille of population was 119.19. The proportion per cent of deaths to daily average strength in the lunatic asylums in the Central Provinces, Madras, Bombay, Punjab, United Provinces, Bengal, Assam and Burma during the year under report was respectively 6.67, 14.35, 7.7, 11.42, 8.15, 8.57, 9.47, and 16.5. Several of the deaths resulted from coprophagie habits which brought on diarrhoea, dysentery, and anaemia due to ankylostomata. No disease broke out in epidemic form. It is hoped that with the various improvements already effected in the asylum and the others under progress the death rate will be lower in the ensuing year."

Lt-Col C. E. Sundar, M.S., Civil Surgeon of Pabna, who is in charge of the asylum, writes as follows—

Types of insanity—As usual mania under its various sub-heads was the common type of insanity, of which 49 patients were admitted, or 54.44 of total admissions, 11 of these cases recovered. Melancholia with 17 admissions, or 18.88 per cent of total, comes next in numerical strength. The number of recoveries under this type was only 4. Insanity of Haschisch or Indian hemp was responsible for 9 admissions. No recovery under this head. Out of 9 admissions under head "Declared to have recovered or not yet diagnosed," 4 recovered. Delusional insanity accounts for 5 admissions,

or 5 55 of the total admissions. Last comes Idiocy with 1 admission.

Aetiological factors.—The Aetiological factor in 21 cases is alleged to have been toxic (chiefly Ganja), in 8 cases mental stress, in 2 heredity, in 2 mental instability, in 2 critical period (all senility), in one physiological defects and errors (over exertion), and in 2 diseases of the nervous system (all Epilepsy). No causes are assigned in 52 cases.

The form prescribed is defective inasmuch as predisposing and exciting causes are stated irrespective of the case or the type of insanity. The defect can be remedied by adding a column for the names of patients and another for the type of insanity so that one may be able to refer to the particular case and also to correlate the type of insanity with the predisposing and exciting causes.

BENGAL

SURGEON-GENERAL G F A HARRIS, C.S.I., F.R.C.P., submitted the report on the Bengal asylums, from which we make the following extracts—

"Admissions.—There was a falling off in admissions, which were 213 (including 16 admissions) as compared with 265 in the previous year. The decrease was shared by all the three lunatic asylums, more than half of it occurring on the criminal side where there were 27 fewer admissions. The falling off is believed to be due to a more rigid discrimination on the part of the executive authorities in handing over harmless lunatics to their friends and relatives instead of sending them to asylums, and also to a certain extent to the Bihar and Orissa and Assam Governments having discontinued sending their lunatics to the asylums of this Presidency. Although the former Government obtained the consent of the Government of Bengal to send its lunatics to the Berhampore Lunatic Asylum temporarily, little or no advantage was taken of this concession probably because the accommodation at the Patna Lunatic Asylum has been adequately increased."

The daily average strength however rose to 1,084. The mortality was low—only 6 per cent at the Central Asylum at Berhampore and 13 per cent at the old and obsolete asylum at Dacca.

"The largest number of admissions into the Indian asylums was as usual for mania (*viz.* 73). Melancholia comes next with 46 admissions, and insanity said to be due to *ganja* smoking stands third with 38 admissions. In the case of the European Asylum, however, *melancholia* was responsible for the highest number of admissions, *viz.*, 3 out of 7, there having been no admissions for *mania* or insanity attributable to, and associated with, *ganja* smoking. One case of *general paralysis of insane* was admitted into the Bhawanipuri Lunatic Asylum, and another into the Dacca Lunatic Asylum. Considering how rare this type of insanity is amongst Indians, it is somewhat doubtful whether the latter was a genuine case of this type. In Captain Peebles' opinion '*ganja*, as in previous years, is the most prolific *aetiological cause of insanity*'. From the proportion of cures given below among the different types of insanity, it would seem also that the type of insanity associated with *ganja* smoking yields more easily to treatment than any other type."

Insanity due to *ganja* smoking . . . 14 38 per cent. to total treated

Melancholia	8 42	"
Delusional insanity	6 60	"
Mania	. 6 25	"

Surgeon-General Harris also writes—

"In March 1913 Captain Peebles, the Superintendent of the Berhampore Lunatic Asylum, and myself visited

Ranchi with the Chief Engineer, Bengal, to discuss with the officers of the Bihar and Orissa Government the plans of the proposed Central Lunatic Asylum. As it is probable that the Central Lunatic Asylums at Ranchi will take at least four or five years (if not more) to be completed, and as the existing accommodation of the asylums in Bengal is insufficient, it would appear that temporary measures of some kind will have to be considered to provide the necessary increased accommodation. In 1912 the capacity of the Berhampore Lunatic Asylum was increased by 90 cells by carrying out certain structural alterations, and last year the accommodation of the Dacca and Bhawanipuri Lunatic Asylums was raised by 40 and 10 cells, respectively, in the same manner. Though these additions may suffice for the present, I have grave doubts as to whether they will suffice until the Central Asylums at Ranchi are completed. The question of increasing the accommodation of the Berhampore Lunatic Asylum on an adequate scale has engaged and still engaging my attention."

THE ASSAM ASYLUM

This Asylum at Tezpur held 229 patients in 1913, of whom 186 were males and 43 females. We quote the following extracts from the report by Colonel H G Banatvala, I.M.S.—

The special features in connection with the health of the inmates are the slightly lower number of admissions to hospital, the considerable increase in the daily average number of sick, and the fall in death rate. They are brought out in the table below—

	1912.	1913
Number of admissions to hospital	202	189
Daily average number of sick	24 76	39 06
Ratio of deaths per cent to daily average strength	20 23	9 47

The bulk of the admissions were for malaria (55 against 52), tubercle of lung and other tubercular diseases (36 against 24), and dysentery (27 against 40). Of the 23 deaths, 14 were tubercular in their origin against 23 in the previous year. The rest were due to pneumonia, acute nephritis, epilepsy and other diseases. The provision of ample air space and the building of three temporary segregation sheds have helped to check the mortality from diseases due to tubercle. The Superintendent has had an anxious time in connection with the increasing number of his "tubercle" cases and may be congratulated on the result of the year's work.

The ratios of deaths per cent of average strength amongst the inmates of the lunatic asylums in the different provinces of India in 1913 were as follows—

1 Bengal	..	8 57
2 United Provinces		8 15
3 Central Provinces		6 67
4 Punjab		11 42
5 Bihar and Orissa		14 9
6 Madras		14 35
7. Bombay		7 7
8 Assam		9 47
9 Burma		16 5

PUNJAB LUNATIC ASYLUM

In the Punjab Asylum at Lahore at end of 1913 there were 683 patients (540 males, 143 females). The daily average strength was the highest on record, *viz.*, 709.

Colonel G J Bamber, M.V.O., who submits the report, writes as follows—

"The various types of insanity treated were idiocy 44, mania 418, melancholia 164, circumscribed insanity 11, mental stupor (delusional) 2, delusional insanity 18, post febrile insanity 8, confessional insanity 4, alcoholic insanity 9, insanity of haschisch 124, and dementia 147."

'Heredity' was the predisposing cause in 12 cases and the exciting cause in 1 case, 'mental instability' and the exciting cause in 4, and 'critical periods' and 'child bearing' in 6 cases each. 'Mental stress' accounts for the exciting cause in 13 cases, 'physiological defects and errors' 3 cases, 'Traumatic' 2 cases, and 'Diseases of the nervous system' 23 cases. Under the head 'Toxic' alcohol and tuberculosis are reported to be the predisposing and exciting causes in 11 cases and 1 case, respectively, while *ganja*, *charas*, and *bhang* is responsible for the exciting causes in 57 cases, fever in 7, acquired syphilis in 1, and plague and other toxins in 2 cases each. The exciting cause was not ascertained in 96 cases, and in 33 cases no exciting causes could be assigned."

"As already noted there has been considerable activity in the matter of improvements in and additions to the buildings in the asylum. Much is still being done and will continue to be done in the current year. An excellent block of 20 quarantine cells is now in course of erection as well as a separate infectious diseases compound. Sanction has been given to white tiling the walls of the female hospital and providing conglomerate flooring in the same building and for two more tube wells. Last but not least sanction to the installation of electric lights and fans in the asylum has also been accorded. This is a great boon, the latter adding enormously to the comfort of the patients, the former rendering it infinitely easier to prevent escapes especially among the criminal lunatics.

Considerable difficulty is experienced in the recruitment of a proper class of attendants, those obtained at present not being of the stamp required for the duties they have to perform. The work is not only irksome, but is also considered derogatory and dangerous, and these are the reasons which prevent men of better status coming forward. Proposals are also before Government for increasing their pay, and it is hoped to obtain a more suitable class of men. Two retired non commissioned officers of the Indian Army have been appointed as warders on Rs 30—2—40 with free quarters to look after and attend to the wants of the insane in the Indian Section and see that the attendants do the same.

An European Warder on Rs 100—10—150, with free quarters, has been sanctioned and will be appointed as soon as quarters for him are ready.

The Franciscan Sisters continue to care for the female lunatics in their usual praiseworthy manner."

Correspondence

OPHTHALMOLOGY IN THE ORIENT

To the Editor of "THE INDIAN MEDICAL GAZETTE"

SIR.—May I be allowed to correct the wrong impression likely to be produced by a statement in Dr Tiffany's article, headed as above, reproduced from *Ophthalmology* in your Gazette for August 1913, made as regards my opinion of Smith's operation of expression in the capsule viz., "He (i.e. Lt Col Maynard) says, that if he were practising ophthalmology in Europe he certainly would not use this method in his private practice, it involves too great a danger of loss of vision, and subsequent deterioration of the globe." What I said was that I did not think Smith's operation likely to be suitable for European or American cases, as fewer appropriate cases occurred in western practice. Should Col Smith's claim that the method is the best of all in unripe cataracts be substantiated by continued observation of such cases there is no doubt its field in Western countries would be enormously increased.

I am sorry that in another account of "The Indian Operation for Cataracts" in the *Journal of Ophthalmology and Otolaryngology* for April 1914, Dr Tiffany has reproduced the same misunderstanding.

MASHOERA, SIMLA,

August, 1914

Yours, etc.,
F P MAYNARD,
LT COL, I.M.S.

IODINE IN CHOLERA

To the Editor of "THE INDIAN MEDICAL GAZETTE,"

SIR—I am sorry to have to worry you about my paper on the treatment of cholera. Having just this morning got my copy of the *IMG* I notice that the printers have made rather a serious mistake as regards the prescription of the injection, instead of putting Aqua ms 20 they have put it Aqua in 20. This I am inclined to think would be read as meaning that two minims contained the quarter grain of Iodine. So lower down when it is stated that twenty minims constitutes one complete treatment, and later it is noted that 20 drops of the above solution is injected, it would mean (there being a quartar grain in 2 drops), 20 drops would contain two and a half grains, and was intended for one dose. This of course would perhaps not matter much in cholera, as I am inclined to think that a patient would very easily tolerate that quantity of Iodine but it certainly was not what I intended.

I think I distinctly noted Aqua Dist in 21. I also remember and I have it in my notes. When referring to the Injection Method that I explained that for convenience I kept a working solution in the following formula —

Iodum	grs 6
Pot Iodid	grs 6
Aqua Distillata	oz 1

Twenty minims of the above solution contained a quarter grain of Iodine.

I find this formula quite omitted.

Had it not been omitted then perhaps any one reading the paper and preparing their solution according to the working formula would not be exposed to a mistake. Anyway to save any misunderstanding would you very kindly cause the mistake to be corrected before an accident can happen which would certainly bring much blame instead of any credit to me.

In the statement in regards to the trial of the mixture. In line 28 the following is printed, "My sister sub assistant surgeon tried the mixture in three cases, and recovered." It should have been "and all recovered."

Trusting you will kindly excuse my worrying, but I do so, apprehensive of some unpleasant mishap to any one who is inclined to give my suggestion an experiment.

Yours, etc.,
J J BRACHIO

COW DUNG AND CALF URINE

To the Editor of "THE INDIAN MEDICAL GAZETTE"

SIR.—The publication of the paper in your esteemed Journal may excite the curiosity of some of my confreres, who are not always familiar with the native ways of thinking and native ways of doing in combating a disease or preventing a disease.

Every nation, a race, or a community has its own characteristics in affording succour to its suffering fellow human being and some may attribute its method of operation to superstition or sentimentalism, pure and simple. I have, however, no quarrel with these class of critics who form an opinion merely on superficial and perfunctory observations which may help in expansion of a view or theory. I, therefore, beg to appeal to you and through you to the great and worthy researchers, who live by their scholastic zeal and ardour and whole hearted devotion placed my countrymen under deep and sincere obligation by bringing to light several new discoveries in the domain of the "Art of Healing" to pay due regard to my humble suggestions as hereinunder.

From time immemorial an idea is rooted in the Hindu mind that "Cow dung" purifies all and sanctifies all. It is used both for domestic and religious purposes, and the Hindu society claims it to be very pure and sacred. A solution made with this stuff and water when sprinkled on a place, pot, or article one sacrilegious and offended in contact with any objectionable article or any kind of impurities is enough to make the latter free from all blimes. Even its scope is so large that when any one taking in a forbidden food violates the command of the *Shastras* is at once exonerated from any sin caused by his out act by ingesting a particle of the cow dung which is cheap and ready at hand. So sacred and pure it is in the eyes of the Hindus that in ancient days the Hindu analysts might have probably discovered certain properties in it that led them to introduce this stuff into society. For washing and cleansing purposes it is largely used. Can we take it then that it possesses the parts of an antiseptic, antizymotic, and disinfectant, and if so proved after analysis is it not desirable that its use should not be confined to the Hindu Home alone, other communities may adopt it as well. I plead for the poorer class who cannot afford to adopt a costly process in matters sanitary, and I plead purely from an economic point of view. It may

help in improving insanitation which is a daily occurrence in our society I leave this matter at the discretion of the eminent researcher.

Next the question of *calf urine*. This is used as a remedy to certain liver affections. In religious performances its purity and sacredness is acknowledged. As a remedial measure it is chiefly used in the so called Infantile liver, both externally by way of "Fomentation" on the liver and internally, dose 1 drachm to ½ ounce, with Syrup Amaranth or ginger juice and sugar to cover its nauseating smell, once in the morning in empty stomach. I have personally used it, and found efficacious in chronic liver complaints. Ayurvedic recommendation is also assigned to it. I have noticed earthy coloured bileless offensive stool due to liver trouble suddenly becoming bile stained after its use.

One omission has crept in my observation i.e. Cow dung. Cakes are made of dung, which when completely dried up are largely used by the Indians as fuel they are best substitutes for many higher classes of fuel and it is said they are superior to coal or other stuff of the same kind. It is admitted that this kind of fuel is remarkably cheap, but there is other quality it possesses which should not be ignored. "Good fuel cooks a good and palatable food" and nature of fuel used regulates its tastefulness. Is it for this reason the *Karnayes* largely use it in preparing some special drugs, and our mothers are accustomed to prepare the invalid's diet with this fuel?

In conclusion I beg to say when the above two stuff are used in various ways in our society they should be thoroughly enquired into and analysed, and I hope the result of analysis will bring good to the people, and we, medical men, may be benefited too.

Thanking you, Sir, in anticipation

202, UPPER CIRCULAR
ROAD, CALCUTTA,
August, 1914

Yours, etc.,
SATKARI GANGULI,
Sub Asst Surgeon (on leave)

[To the sanitaryan the use of animal excreta will scarcely commend itself, and there is not a scrap of scientific proof that cow dung is less objectionable than any other dung. As for cow or calves urine we incline to look upon it with the same degree of disgust as hippopotamus' or rhinoceros' urine—which we are informed is a 'remedy' purchased from the Calcutta "Zoo" and much appreciated by a certain class of patient and practitioner—ED, I M G.]

ABSENCE OF UTERUS

To the Editor of "THE INDIAN MEDICAL GAZETTE"

SIR.—I read with much interest a "case of absence of uterus" reported by Miss B. K. Chowdhry in the August number of the *Indian Medical Gazette*. As opinions are invited I venture to add my experience along with her.

Case I—I was called to attend a female, aged about 20, who "was suffering from a chronic disease near her genitals" (as stated by her husband).

On examination I found several rectovaginal fistulae, besides a couple of anal fistulae of the tortuous course opened about an inch away from the orifice of the anus. The rectovaginal fold was unusually hard and thick. I presume that this was the result of a long standing and neglected abscess which is quite possible in our country where the females try to suppress their illness as long as they can, and the relations do not go to a doctor unless they think it quite unbearable and specially when the patients take to bed.

In course of my examination I was astonished to find that she had no uterus. At the bottom of the canal there was a small nodule as big as a pea, indicating the place of the os.

When I wished my hand an idea struck me, and I asked the permission of the husband to see her breasts. What I suspected was proved to be true. She had no breasts. The cut of her feature was rather masculine than anything else. The husband ultimately informed me that she never menstruated though she was about 20.

My opinion was sought. Before my departure I distinctly told the husband that he should marry again (as polygamy is permitted in his society) if he desired to have any issue.

Case II—I attended a peculiar hysterical female in a Brahmin family. When I finished with her I was requested to see the young wife of a son of the family.

They suspected that there was something wrong with the girl as no sign of womanhood was manifested, though she was about 18.

On examination I found the external genitals fairly developed. Labia minora thin. The calibre of the canal was longer but narrower than that of the ordinary run of girls of her age. There was a rudimentary or just like a small nipple, but the uterus and the ovaries were wanting, and the menstruation was totally absent.

I plainly told the guardians how far they could expect from the girl.

In both the cases as far as I could gather from the side of the husband that the girls (if I am right to call them so) had practically no carnal appetite.

The following things are to be noticed in these cases—

Want of uterus and its appendages is accompanied with the total absence of the mammary glands.

The appearance of the girls becomes rough and masculine.

The expansion of the ilium is tested and so consequently the buttock is not properly developed as healthy woman of that age.

There was another peculiarity. I noticed that the girls had no hair in the armpits or on the mons veneris.

I believe that there is an intimate connection between the uterus and the mammary glands. Natural want of one organ hamper with the development of the other.

In Miss Chowdhry's case we find the canal was so short and narrow that "it hardly admits the tip of the index finger and with much effort an inch of the index finger was admitted." "There is excessive secretion during coitus." How coitus is possible with such a short but narrow vagina we cannot clearly understand.

Miss Chowdhry has not mentioned about the condition of the hymen. We inclined to suspect it to be a case of imperforate hymen, but Miss Chowdhry will judge it better than anybody else.

My presumption is that as the woman has got "breasts of middle size with small areole" it is quite possible that she has got some form of uterus, which may be developed in course of time.

I have, &c.,
HARI CH GUPTA,
MEDICAL PRACTITIONER,
Multagacha (Mymensingh)

THERAPEUTIC NOTICES

MESSRS E. VIET & CO (118, High Holborn, London, E.C.) send us several pamphlets to show the advantages of COLLOIDAL IODINE or *Iodeol* in Pneumonia, and the use of IODAPGOL in gonorrhoea and its complications. *Iodeol* can also be obtained in the form of ovules for gynaecological use.

Messrs Bresillon & Co, Garrage Buildings, E.C., London, publish descriptions of excellent *auto injectable* ampoules, ensuing quite aseptic injection. The same firm's medical emergency pocket case is certainly useful for the up to date physician.

Messrs Burroughs, Wellcome & Co had a fine exhibit at the B.M.A meeting at Aberdeen in end of July 1914. The following new preparations were much inquired after, viz., *Lavantol*, an attractive paraffin jelly, *Kepler's Malt Extract*, *Bismuth Carbonate Infundin* (from pituitary gland), *Epinine*, *Lodol*, and "Vaporoles" such as Tincture of Iodine.

Service Notes

SURGEON GENERAL SIR ANTHONY DICKSON HOME, V.C., K.C.B., the most distinguished medical officer on the retired list of any of the Medical Services, died in London on 9th August 1914, aged 87. He was born at Dunbar in 1826, and, after taking the M.D. at St Andrews, as well as the M.R.C.S., in 1847, entered the army as Assistant Surgeon on 17th March 1848. After serving in the West Indies, Nova Scotia, Guernsey, Ireland, and Gibraltar, he went to the Crimea with the 8th Hussars and served throughout the Crimean war, being present at the battles of Balaklava and Sebastopol, and throughout the siege of Sebastopol, and the operations near Sevastopol, receiving the medal with two clasps, and the Turkish medal. During the war he was promoted to Surgeon, from 9th February 1855. On the outbreak of the Indian Mutiny he went to India as Surgeon of the 90th Foot, and took part in the first relief of Lucknow, was in the Residency during the second siege, and with the force left at Alambagh, and served in the final capture of Lucknow, gaining the Mutiny medal with a clasp, and one year's service for Lucknow, as well as the V.C. At Lucknow he won the Victoria Cross by his heroic defence of the wounded left behind by the relieving column, when Havelock forced his way into the Residency during the first relief. Three officers of the A.M.D. gained the Cross in the Crimea, and three in the Mutiny. Sir Anthony was thus one of the first medical officers to gain this most coveted distinction, and at the time of his death was the senior medical officer, both in rank and in date of gaining it, who held it. On 31st March, 1858, he was appointed a Staff Surgeon. From India he went to

Oct., 1914.]

China, and served through the China war of 1860 on the staff of General Sir Hope Grant, and was present at the capture of the Taku Forts and the action near Pekin in the road to Pekin, receiving the medal. On returning to England, he was sent to Canada, to make the medical arrangements for war, which was then expected, with the States, a war which happily did not come off. Returning to India, he was sent to New Zealand, where he served through the Maori war of 1863-65, in the campaigns in Wai-kato valley, Taumanga, and Waikato, gaining another medal, the CB, and being specially promoted to Surgeon Major. His next war service was the Ashanti war of 1873-74, where he served as P.M.O. under Sir Garnet Wolseley, was present at the action of Essman, was mentioned in despatches in the London Gazette of 18th November 1873 and 7th March 1874, and was advanced to K.C.B., besides receiving the medal. This was his last war service. On 4th April, 1880, he was promoted to Surgeon General, and soon after was appointed P.M.O. H.M.'s Forces in India. A few seniors, and many retired officers, will remember him when holding this post. He retired, with 38 years' service, on 30th November 1886. Subsequently he was awarded a good service pension for meritorious and distinguished service, from 13th November 1891. Two years ago his auto biography was published, under the name of *Service Memories*, by Edward Arnold, London, (1912), rough notes of his service and work down to the end of the Maori war, edited by Lieutenant Colonel C.H. Melville, R.A.M.C. The fact of his gaining the V.C. is mentioned only in the editor's notes.

THE Secretary to Govt of India (Military Dept.) writes —

"It has come to the notice of the Government of India that instances have recently occurred in which officers in civil employ who are eligible for leave under the Military Leave Rules, have overstayed the period of leave granted them, and subsequently applied for extensions to cover the period of overstay."

I am, therefore, directed to state for the information of all concerned that leave granted under the Military Leave Rules to officers in civil employ is subject to the limitations and conditions prescribed in Army Regulations, India, Volume II. In cases where an extension becomes necessary and is admissible, the procedure specified in paragraph 234 A, Army Regulations, India, Volume II, must be followed. Officers overstaying the period of leave granted them should be dealt with under the provisions of paragraph 216, (i), (ii) or (iii) *ibid* according to the circumstances of the case.

IN pursuance of Rule 13 of the Rules made under clause (a) of sub-section (2) of section 33 of the Bengal Medical Act, 1914 (Bengal Act VI of 1914), to regulate the first elections of members to the Bengal Council of Medical Registration under clauses (c) to (f) of section 4 of the said Act (which were published under Notification I No 1568 Medl, dated the 30th May 1914, at pages 1011-1016 of Part I of the Calcutta Gazette of the 3d June 1914, it is hereby notified for general information that the names of the candidates, who have been duly elected to be members of the said Council under clauses (d) to (f) of the said section 4 are, respectively, as follows —

Candidate duly elected under clause (d) of section 4

Lt Col E H Brown, I M S (retired), M D (Durham), M R C P (Lond), F R C S (Edin), D P H (Lond), L M (Edin)

Candidate duly elected under clause (e) of section 4

- 1 Dr Suresh Prasad Sarbadhikari, M D
- 2 Babu Haal Dhan Dutta, I M S
- 3 Dr Kedar Nath Das, M D

Candidate duly elected under clause (f) of section 4

- 1 Dr Saat Kumar Mullick M D, C M (Edin)
- 2 Rai Sahib Guris Chandra Bagchi, Senior Grade Sub Assistant Surgeon

CAPTAIN C NEWCOME, I M S, is appointed to hold civil medical charge at Buxa Duar in the district of Jalpaiguri, with effect from the forenoon of the 14th August 1914, vice Captain S H Middleton West, I M S.

No less than 135 I M S officers returned to duty in the special transport *Soomali*, having left England on 11th August, 8 days after declaration of War.

CAPTAIN R H LEE, I M S, made over medical charge of the Midnapore Central Jail to Assistant Surgeon Nilratan Banerji on the forenoon of 18th August 1914.

ASSISTANT SURGEON NILRATAN BANERJI made over medical charge of the Midnapore Central Jail to Officiating Civil Surgeon Nipendra Nath Basu on the forenoon of 20th August 1914.

CAPTAIN R H LEE, I M S, made over executive charge of the Midnapore Central Jail to Mr G P Hogg, I C S,

Additional District Magistrate, Midnapore, on the forenoon of 18th August 1914.

ASSISTANT SURGEON NARINDRA NATH CHAUDHURI made over charge of the Noakhali Jail to Civil Surgeon Khan Bahadur Shaikh Ilahi Buksh on the forenoon of 18th August 1914.

MAJOR F A F BARNARDO, I M S, made over charge of the Comilla Jail to Assistant Surgeon Satish Chandra De in the afternoon of 15th August 1914.

MAJOR C A GOURLAY, I M S, made over charge of the Chittagong Jail to Assistant Magistrate Mr W H Carter, I C S, in the afternoon of 31st July 1914.

ASSISTANT SURGEON AMBIKA CHARAN DATTA made over charge of the Chittagong Jail to Major C A Gourlay, I M S, on the forenoon of 20th August 1914.

ASSISTANT MAGISTRATE MR W H CARTER, I C S, made over charge of the Chittagong Jail to Officiating Civil Surgeon Ambika Charan Datta on the forenoon of 5th August 1914.

THE services of Captain A E Gisewood, M I, I M S, Chief Plague Medical Officer, Central Provinces, are replaced at the disposal of the Government of India, Army Department, with effect from the 13th August 1914.

THE services of the undermentioned Medical Officers are replaced at the disposal of the Government of India, Army Department, with effect from the dates on which they hand over charge —

Major V H Roberts, I I C S, I M S, Officiating Civil Surgeon, Chanda
Captain C C C Shaw, M D, I M S, Officiating Civil Surgeon, Raipur.

SENIOR grade Civil Assistant Surgeon Uma Charan Ray, L M & S, in charge of the Main Hospital, Raipur, is appointed to officiate temporarily as Civil Surgeon, Raipur, vice Captain C C C Shaw, M D, B S, I M S, reverted to military duty.

THIRD grade Civil Assistant Surgeon A F W DaCosta, I M & S, in charge of the Main Hospital, Chanda, is appointed to officiate temporarily as Civil Surgeon, Chanda, vice Major V H. Roberts, I I C S, I M S, reverted to military duty.

UNDPR Section 6 of the Prisons Act, 1894, the Chief Commissioner is pleased to appoint 3rd grade Civil Assistant Surgeon A F W DaCosta, L M & S, Officiating Civil Surgeon, to the executive and medical charge of the Chanda District Jail.

THE services of Major R A Lloyd, M D, M R C S, L R C P, I M S, Officiating Civil Surgeon, Bilaspur, are replaced at the disposal of the Government of India, Army Department, with effect from the date on which he hands over charge.

SECOND grade Civil Assistant Surgeon Girija Shanker Shukul, L M & S, in charge of the Main Hospital, Bilaspur, is appointed to officiate temporarily as Civil Surgeon, Bilaspur, vice Major R A Lloyd, M D, M R C S, L R C P, I M S, reverted to military duty.

UNDPR Section 6 of the Prisons Act, 1894, the Chief Commissioner is pleased to appoint 2nd grade Civil Assistant Surgeon Girija Shanker Shukul, L M & S, Officiating Civil Surgeon, Bilaspur, to the executive and medical charge of the Bilaspur District Jail.

THE services of 3rd class Military Assistant Surgeons C P O'Brien and E H Bolland, on plague duty in these Provinces, are replaced at the disposal of the Government of India, Army Department, with effect from the date they hand over charge.

CAPTAIN F A BARKER, I M S, was granted leave for 2 months from 14th July, and Military Assistant Surgeon Hottinger acted for him as Superintendent of the Bostral Central Jail, Lahore.

LIEUTENANT COLONEL CLARKE, I M S, handed over Jullundur District Jail to Assistant Surgeon B A Singh on 3rd August.

CAPTAIN H A H ROBSON, I M S, received charge of the Behampore Jail in the afternoon of the 10th August 1914, relieving Captain Sandes, I M S.

MAJOR E J MORGAN, I M S, Civil Surgeon, has been granted by His Majesty's Secretary of State for India extension of six months on medical certificate

THE services of the following I M S officers are replaced at the disposal of the Government of India, Army department, with effect from the dates they relinquish charge of their duties —

Major H W Illius, I M S, Civil Surgeon sub *pro tem* Rae Bareli, and

Captain J S O'Neill, I M S, Officiating Civil Surgeon, Jhansi

THE Civil Surgeon of Lucknow to hold visiting medical charge of the Rae Bareli district, *vice* Major Illius I M S, reverted to military duty

CIVIL Assistant Surgeon Gokul Prasad Tiwari, attached to the sadar dispensary, Jhansi, to hold civil medical charge of that district, in addition to his own duties, *vice* Captain O'Neill, I M S, reverted to military duty

THE Civil Surgeon of Cawnpore to hold visiting medical charge of the Jhansi district, *vice* Captain O'Neill, I M S, reverted to military duty

LIEUTENANT COLONEL J MORWOOD I M S, Civil Surgeon, on being recalled from leave, is posted to Moradabad as a temporary measure

COLONEL G F A HARRIS, C S I, F R C P, V H S, I M S, is appointed to be Surgeon General with the Government of Bengal, with effect from the 1st April 1912

LIEUTENANT COLONEL R K MITTER, Capt G W Macdonald, Capt M F Reaney, Capt A O Munro, Capt A C Anderson, and Capt D P Goil attended the 4th session of the London School of Tropical Medicine which terminated on 23rd July

CAPTAIN H M BROWN, M B, is promoted to be Major, I M S, with effect from 1st March 1912. Capt Brown belongs to the batch of 1st September 1902, and consequently has got accelerated promotion

THE promotion of Major F E Wilson, M B, notified in Army Department Notification No 682, dated the 31st July 1914, is antedated from the 26th July 1914 to 26th January 1914

THE services of Capt W E Brierley I M S, were replaced with the Military Department with effect from 3rd July

MAJOR S P JAMES, M D, I M S, on leave has had his leave altered to privilege leave for 5 days and medical leave for 9 months and 5 days from 23rd January last

CAPTAIN R KELSALL, I M S, was recently granted an extension of furlough for 6 months by the Secretary of State

MILITARY ASSISTANT SURGEON T H BROOKS, Civil Surgeon, Rangoon, has passed the test examination in the Chingpui dialect of the Kachin language

To be substituted for the same number and date in *Assam Gazette* —

"No 4521 M — Captain T H Bonnar, I S M D, Civil Surgeon, Garo Hills, is allowed privilege leave for one month combined with leave in or out of India for five months, under Articles 233, 260, and 606 (2) of the Civil Service Regulations and paragraph 435 of the Army Regulations, India, Volume I, with effect from the 8th July 1914

THE services of 2nd Class Assistant Surgeon J L Wreden, I S M D, are placed temporarily at the disposal of the Chief Commissioner, Assam, for civil employment, with effect from the 18th July 1914

SUB ASSISTANT SURGEON KHUDA LAKHSH, I S M D, is appointed to the Medical Store Depot, Calcutta, with effect from the 13th July 1914

THE following Military Assistant Surgeons of the Indian Subordinate Medical Department have been deputed for employment in the British East Africa Protectorate with effect from the dates noted against their names —

4th Class Assistant Surgeon P C D'Cruz—23rd May 1914

" " " " H L Saigent—10th June 1914

" " " " W N Saigent—8th July 1914

THIRD Class Assistant Surgeon J O Dewey, I S M D, Assistant to Health Officer, Simla, is appointed temporarily

to hold charge of the Station Staff Dispensary, Simla, in addition to his own duties, with effect from the 16th August 1914

FOURTH Class Assistant Surgeon C G S Corner, I S M D, attached to the Walker Hospital, Simla, is appointed temporarily to hold charge of the X Ray Department of the Ripon Hospital, Simla, in addition to his own duties, with effect from the 16th August 1914

SECOND Class Military Assistant Surgeon F R Smith, I S M D, is granted 90 days' privilege leave combined with nine months furlough in or out of India with effect from the 4th August 1914

THE services of Captain G Jolly, M B, I M S, were placed temporarily at the disposal of the Government of Bombay for employment in the Sanitary Department

THE Department of Education notification No 1465 Sanitary, dated the 7th August 1914, placing the services of Captain G Jolly, M B, I M S, temporarily at the disposal of the Government of Bombay for employment in the Sanitary Department, is hereby cancelled

MAJOR L J M DEAS, I M S, Agency Surgeon, Southern States of Central India, was appointed, temporarily, to hold charge of the current duties of the office of Political Agent, Southern States of Central India, in addition to his own duties, with effect from the 18th July 1914, and until further orders

THE services of Captain B E M Newland, I M S, officiating civil surgeon, Etawah are replaced at the disposal of the Government of India, Army department, with effect from the date he relinquishes charge of his duties

The services of the following I M S officers are replaced at the disposal of the Government of India, Army department, with effect from the date they relinquish charge of their present duties —

Captain M R C MacWatters, officiating chemical examiner, Government analyst and bacteriologist for the United Provinces and the Central Provinces, and Major W J Collinson, on plague duty, Meerut

THE services of the following I M S officers are replaced at the disposal of the Government of India, Army Department, with effect from the date they relinquish charge of their present duties —

Captain C H Reinhold, officiating civil surgeon, Moradabad
Captain A Cameron, chief plague officer,
Captain W D Wight, on plague duty, Benares,
Captain H P Cook, on plague duty, Fyzabad, and
Captain J F Boyd, on plague duty, Bareilly

CIVIL ASSISTANT SURGEON DINESH KRISHNA MUKHEPJI, attached to the sadar dispensary, Moradabad, to hold civil medical charge of that district, in addition to his own duties, *vice* Captain Reinhold, I M S, reverted to military duty

THE civil surgeon of Bareilly to hold visiting medical charge of the Moradabad district, *vice* Captain Reinhold, I M S, reverted to military duty

SENIOR grade civil assistant surgeon Saligram Misra, attached to the sadar dispensary, Etawah, to hold civil medical charge of the district, in addition to his own duties, *vice* Captain Newland, I M S, reverted to military duty

THE civil surgeon of Cawnpore to hold visiting medical charge of Etawah, *vice* Captain Newland, I M S, reverted to military duty

SHAMRAO NARAYAN GORE, first assistant to Government analyst, United Provinces, to hold charge of the duties of chemical examiner, Government analyst and bacteriologist for the United Provinces and the Central Provinces, in addition to his own, as a temporary measure, *vice* Captain MacWatters, I M S, reverted to military duty

ASSISTANT SURGEON VARJIVANDAS DAMODARDAS MERCHAND, I M & S, to act as Civil Surgeon, Dhulia, *vice* Captain K G Gharpurey, I M S

MAJOR C C MURISON, F R C S E, D P H (Edin and Glas), D T M (Liverpool), I M S, is appointed to act as Presidency Surgeon, Second District, and in medical charge of the Common Prison, House of Correction and Byculla Schools, Bombay, in addition to his own duties, *vice* Captain N N G C McVean, M B, I M S

CAPTAIN W D KEYWORTH, I M S, is appointed to act as Superintendent, Central Lunatic Asylum, Yerwada, in addition to his special duty, vice Captain O A R Berkeley Hill, M B, I M S

HIS Excellency the Governor of Bombay in Council was pleased to make the following appointments pending further orders —

Military Assistant Surgeon A Baldwin DeSouza to do duty as Civil Surgeon, Surti, vice Major T G F Paterson, M B, I M S

Assistant Surgeon Aideshur Manekji Dotiwala, L M & S, to act as Civil Surgeon, Larkana, vice Captain D D Kamat, I M S

Assistant Surgeon Khan Bahadur Erachji Shehuji Bharucha, L M & S, to act as Assistant to the Civil Surgeon, Poona, vice Captain J Smalley, M B, I M S

HIS Excellency the Governor of Bombay in Council was pleased to make the following appointments —

Captain R F Steel, M B, B Ch (Duh), I M S, on return from leave, to do duty as Civil Surgeon, Sholapur

Captain F B Shettle, I M S, on relief, to be on general duty at St George's Hospital, Bombay

CAPTAIN N N G C MCVEAN, I M S, and Major C C Murison, I M S, respectively delivered over and received medical charge of His Majesty's Common Prison and House of Correction on the 13th August 1914, after office hours

THE services of the following officers are placed at the disposal of the Government of India in the Home Department —

Captain E T Harris, I M S.

Captain W F Brayne I M S, and

Captain W S McGillivray, I M S

THE following appointments and transfers are ordered in the Civil Medical Department, Burma —

Civil Assistant Surgeon P Radakrishna Menon, M B, C M (Mad), to officiate as Civil Surgeon, Taunggyi until further orders, in place of Captain W F Brayne, I M S, whose services have been placed at the disposal of the Government of India

CIVIL Assistant Surgeon Maung Shwe Ge, L M & S (Cal), to officiate as Civil Surgeon, Pegu, is a temporary measure, in place of Mr H E Wells, M B, C M (Edin) transferred

MR H E WELLS M B, C M (Edin), to be Civil Surgeon, Toungoo, in place of Captain E T Harris I M S, whose services have been placed at the disposal of the Government of India

THIS department Notification No 147, dated the 11th June 1914 so far as it concerns the appointment of Mr Hari Rama, M B, and B S (Pun), to be a temporary Civil Assistant Surgeon in Burma, is hereby cancelled

ON return from leave, Major E R Rost, I M S, is appointed to be Civil Surgeon, Myaungmya, in place of Mr R A Hollingsworth, L R C P & S (Edin), transferred

MR R A HOLLINGSWORTH, L R C P & S (Edin), is appointed to be Civil Surgeon, Insein and Hanthawaddy Districts excluding the Syriem Municipality, in place of Senior Military Assistant Surgeon and Honorary Captain T W Minty, transferred

SENIOR MILITARY ASSISTANT SURGEON AND HONORARY CAPTAIN T W MINTY is appointed to be Civil Surgeon, G W Vincent, transferred

MAJOR N W Mackworth, I M S, made over charge of the Punjab Jail to Babu Narendra Nath Dutta, Deputy Magistrate and Deputy Collector, in the afternoon of the 13th August 1914

MAJOR J MASSON, I M S, made over charge of the Dubhanga Jail to Babu Rajendra Nath Chakravarti, Assistant Surgeon, in the afternoon of the 12th August 1914

OWING to recall of Medical Officers the following postings have been ordered in Bengal — Lt Col Nott goes to Howrah, Lt Col Wood to Rajshahi, Capt Dutton to Comilla, Capt Goil to Mymensingh, Capt Christian to Midnapur, Major Foster to Serampore, Major Moses to be Police Surgeon, Calcutta, Major D McCay, returns to Medical College, Calcutta

CAPTAIN H P COOK, I M S, Officer on Plague Duty, Fyzasaries in addition to his own duties, vice Captain N S Simpson, I M S, deputed to Kasauli

CAPTAIN C L DUNN, I M S, Deputy Sanitary Commissioner, has been granted by His Majesty's Secretary of State for India extension of leave by three months on medical certificate

THE Services of 4th Class Assistant Surgeon L D O Meiercs, I M S, are placed at the disposal of the Indian Research Fund Association, for employment in connection with the enquiry into Kala Azar, with effect from the 5th April 1914

SECOND Class Assistant Surgeon C W T Montgomery, I M S, is appointed temporarily to the Subordinate Medical charge of Medical Store Depot, Calcutta, with effect from the 9th July 1914

The leave granted to No 1213, 2nd Class Sub Assistant Surgeon Gopal Dutt Joshi, I M S, in this office Notification No 63, dated the 5th May 1911 is extended by three months

THE following letter from the Government of India to the Punjab Government clearly settles the point at issue —

"With reference to paragraph 1 of the letter from the Chemical Examiner which accompanied your letter No 703 (M and S), dated the 2nd December 1913, and in continuation of the Home Department Resolution No 2227 C 223 C, dated the 26th March 1914, I am directed to state for the information of His Honour the Lieutenant Governor, that the Government of India have decided that Commissioned Medical Officers who join the Chemical Examiner's Department should have the option of reverting at any time within the first two years of their service therein. If within that period an officer desires to leave the Department, he must ordinarily revert to the duty, military or civil on which he was employed, previous to his appointment as a Chemical Examiner. If he was in civil employ, he will upon reversion be placed at the bottom of the provincial list but if only a candidate for civil employment, he will have to wait his turn for such employment in the usual way."

The same rule applies to candidates in the Civil Department

IN the Jail Department Lieutenant Colonel Singh returns to Ranchi as I G of Prisons B and O, Lieutenant-Colonel Mulvany goes back to charge of Alipore Central Jail, Lieutenant Colonel Parry goes to Midnapore, and Captain Lee reverts to military duty

THE undermentioned officers of the Indian Medical Service having completed their courses at the Royal Army Medical College and at Aldershot, have been finally admitted to the service. Their commissions will bear date the 1st January 1914 —

George Henry Mahony, V B, V Sc
Gordon Covell, V B
William Ross Stewart, M B
Koti Venkata Ramana Rao
John Gregory Owen Moses, M B
Hari Chand
Venkatisubba Mahadevan
Alfred Charles Lowther O'Shee Bilderbeck, V B
Jacob William van Reenen, V B
Basil Fraser Beatson
Maurice James Roche, M B
Nehchil Das Puri, M B
Prabodh Chandra Roy, M B
Jagannath Balkrishna Vaidya
Joseph Martin Reeves Hennessy
Alfred Glen Cowper
William Mawhood Lupton
Hubert Horan Brown
Charles Henry Neil Baker

THE following substantive changes are sanctioned among Agency Surgeons under the Foreign and Political Department —

Consequent on the replacement at the disposal of His Excellency the Commander in Chief in India of the services of Lieutenant Colonel W R Edwards, C B, C M G, Indian Medical Service (Bengal), an Agency Surgeon of the 1st Class and Chief Medical Officer in the North West Frontier Province, and with effect from the 25th May, 1914 —

Lieutenant Colonel T W Irvine, Indian Medical Service (Bombay), to be confirmed as an Agency Surgeon of the 1st Class and Chief Medical Officer in the North West Frontier Province

Captain C I Buxley, Indian Medical Service, to be confirmed as an Agency Surgeon of the 2nd Class

Consequent on the retirement from the service of Major W E Scott Moncrieff, Indian Medical Service (Bengal),

an Agency Surgeon of the 2nd Class, and with effect from the 28th July 1914 —

Captain J B D Hunter, Indian Medical Service, to be confirmed as an Agency Surgeon of the 2nd Class

The services of Major R A Needham, M.L., I.M.S., are placed temporarily at the disposal of His Excellency the Commander in Chief in India

NOTIFICATIONS Nos 4127/II—458 and 4128/II—458, dated the 15th August 1914, granting leave to Captain Peterson, Cantonment Magistrate, Agra, and appointing Captain Williams, I.M.S., to act in his place, are hereby cancelled

CIVIL ASSISTANT SURGEON JASODA NAND SRIVASTAVA, attached to the sadar dispensary, Banda, to hold civil medical charge of that district, in addition to his own duties, vice Captain Nesfield, I.M.S., reverted to military duty

THE Civil Surgeon of Allahabad to hold visiting medical charge of the Banda district, vice Captain Nesfield, I.M.S., reverted to military duty

CIVIL ASSISTANT SURGEON RAI GURU PRASANNA RAHA SAHIB, attached to the sadar dispensary, Bulandshah, to hold civil medical charge of that district, in addition to his own duties, vice Captain Buckley, I.M.S., reverted to military duty

THE Civil Surgeon of Meerut to hold visiting medical charge of the Bulandshah district, vice Captain Buckley, I.M.S., reverted to military duty

CIVIL ASSISTANT SURGEON SIDH GOPAL GURHA, attached to the sadar dispensary, Budan, to hold civil medical charge of the district, in addition to his own duties, vice military assistant surgeon F W Holmes, reverted to military duty

THE Civil Surgeon of Bareilly to hold visiting medical charge of Budan, vice Military Assistant Surgeon F W Holmes, reverted to military duty

MILITARY ASSISTANT SURGEON E C BEDELL I.S.M.D., attached to the Oudh and Rohilkhand Railway dispensary, Moradabad, to hold medical charge of the railway administration, in addition to his own duties, from the 11th August 1914, vice Captain Reinhold, I.M.S., reverted to military duty

CIVIL ASSISTANT SURGEON GANDA SINGH SODHI, attached to the Rurki dispensary, held civil medical charge of Rurki in addition to his own duties from the 15th to the 19th August 1914, vice Captain Tomlinson, R.A.M.C.

THE services of Captain N S Simpson, I.M.S., on plague duty, and of Military Assistant Surgeon V G Mathews, I.S.M.D., lecturer, Materia Medica, King George's Medical College, Lucknow, are replaced at the disposal of the Government of India, Army Department, with effect from the dates they relinquished charge of their duties

THE services of the following I.M.S. officers are replaced at the disposal of the Government of India, Army Department, with effect from the dates they relinquished charge of their duties —

Captain V B Nesfield, officiating Civil Surgeon, Banda, and

Captain H C Buckley, officiating Civil Surgeon, Bulandshah

THE services of the following I.S.M.D. officers are replaced at the disposal of the Government of India, Army Department, with effect from the dates they relinquished charge of their duties —

Military Assistant Surgeon F W Holmes, Civil Surgeon, Budan, and

Military Assistant Surgeon T W Twells, attached to the Thomson Civil Engineering College dispensary, Rurki

Military Assistant Surgeon L V Jaensch, Civil Surgeon, Basti, and

Military Assistant Surgeon T B Butcher, officiating Civil Surgeon, Sitapur

CIVIL ASSISTANT SURGEON GAURI NATH, attached to the sadar dispensary, Basti, to hold civil medical charge of that district in addition to his own duties, vice Military Assistant Surgeon Jaensch, reverted to military duty

THE Civil Surgeon, Gorakhpur, to hold visiting medical charge of the Basti district, vice Military Assistant Surgeon Jaensch, reverted to military duty

CIVIL ASSISTANT SURGEON SARUP NARAYAN MATHUR, attached to the sadar dispensary, Sitapur, to hold civil

medical charge of that district, in addition to his own duties, vice Military Assistant Surgeon Butcher, reverted to military duty

THE Civil Surgeon of Kheri to hold visiting medical charge of the Sitapur district, vice Military Assistant Surgeon Butcher, reverted to military duty

THE services of the following I.S.M.D. officers are replaced at the disposal of the Government of India, Army Department, with effect from the date they relinquish charge of their duties —

Military Assistant Surgeon G S Jennings, King George's medical coll., Lucknow

Military Assistant Surgeon A McCurtis, attached to the European civil hospital, Allahabad

CAPTAIN R T WELLS, I.M.S., made over charge of the duties of Superintendent of the District Jail at Jhelum to Assistant Surgeon Baikat Ali, M.B., on the forenoon of the 12th August 1914

MAJOR H C KEATIS, I.M.S., made over charge of the duties of Superintendent of the District Jail at Multan to Senior Assistant Surgeon Lala Ram Nurun on the afternoon of the 11th August 1914

MAJOR W H KENRICK, L.R.C.P., M.R.C.S., D.T.M., I.M.S., Officiating Civil Surgeon, 1st Class, is confirmed in that appointment with effect from the 2nd April 1914, vice Colonel H E Banivala, I.M.S., Civil Surgeon, 1st Class, confirmed in his appointment as Inspector General of Civil Hospitals and Prisons and Sanitary Commissioner, Assam

In consequence of the reversion from the Special Malabar Survey duty to the Medical Department of Major W H Kenrick, L.R.C.P., M.R.C.S., D.T.M., I.M.S., Civil Surgeon, 1st Class, with effect from the 1st August 1914, Major Padmaka Krishn Chitrile, L.R.C.P., L.R.C.S., I.M.S., Officiating Civil Surgeon, 1st Class, reverts to the 2nd Class with effect from that date

DEPUTY MAGISTRATE MAULVI SAVID SALAMATULLAH made over charge of the Barisal Jail to Dr H Mansfield, Civil Surgeon, on the forenoon of the 17th August 1914

MAJOR H EMSLIE SMITH I.M.S., made over charge of the Mymensingh Jail to Additional District Magistrate, Mr E M Mannoch, on the forenoon of the 14th August 1914

Notice.

SCIENTIFIC Articles and Notes of interest to the Profession in India are solicited. Contributors of Original Articles will receive 25 Reprints gratis, if requested

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- DaCosta's Modern Surgery (Seventh Ed) W B Saunders Co
- Pilcher's Edition of Rossing's Abdominal Surgery Rs 15 12 Agents Thacker, Spink & Co, Calcutta
- Science Prodigies Ed by Sir R Ross J Murray
- J B Murphy's Clinics, Vol II No 6 W B Saunders Co
- Thacker's Medical Directory, 1914
- Prospectus of London School of Tropical Medicine
- Sir P Lukis and Blackham's Tropical Hygiene (Second Ed) Thacker, Spink & Co
- Rendle Short's Newer Physiology Wright & Co
- Public Service Reports, U.S.A., for 1913
- A H Rutherford's Ilio-Caecal Valve H K Lewis
- Tibbles' Dietetics Baillière, Tindall & Cox
- The Mayo Clinics Collected Papers W B Saunders Co

LETTERS, COMMUNICATIONS, &c, RECEIVED FROM —

- Lt Col H Smith, I.M.S., London, Capt O A Gill, I.M.S. Lahore,
- Lt Col J P Maynard, I.M.S., Simla Major P Connor, I.M.S., Chiplura
- Colonel F J Drury, I.M.S., Ranchi, Dr G Chatterjee, Calcutta Asst. Surgeon E Millicans Khan, Gorakhpur, Milly Asst Surgeon O'Brien
- Major Stokes, I.M.S., Nagpur, Capt Recblet, I.M.S., London, Sir Leo Ward Rogers, I.M.S., Calcutta, Sir C Fardey Lukis, I.M.S., Simla

Original Articles.

ASYLUM DYSENTERY.

By P. HEFFERNAN,

CAPTAIN, R.M.S.,

Superintendent, Madras Lunatic Asylum

FOURTEEN years ago, after Manson (1) had written scathingly of "that very fatal type of dysentery, euphemistically termed 'Colitis,' which is the scourge and disgrace of more than one of our English Lunatic Asylums," a commission was appointed to investigate dysentery in the English Asylums, and, as a result of its labours, asylum dysentery came to be attributed in the most advance circles, to the Micrococcus of Durham and Mott (2). Since then much water has flown beneath the bridges, and dysenteries have been split into two great classes—the amoebic and the non-amoebic. Thanks to the labours of Sir Leonard Rogers and other physicians in this country—the problems of the etiology, treatment, and prophylaxis of the former variety of dysentery and its complications may be regarded as solved. There is every reason to hope that, in the near future, serious cases of amoebic dysentery and liver abscess will be as rare as cases of typhus fever.

Unfortunately we cannot as yet hold out hopes of similar success in the non-amoebic or "bacillary dysenteries," of which asylum dysentery is the type. In the lunatic asylums of every country in the world, as far as the writer is aware, without exception, this disease still exacts toll, and does so in despite of the glazed walls and marble floors, water carriage sewage systems, and high-pressure supplies of germ free water that are to be found in some of the latest institutions for the care of the insane. Nor is the use of the euphemism "Colitis" confined to the statistics of lunatic asylums. Indeed most asylums have discarded the term altogether.

But there is reason to believe that this and similar misleading expressions have found their way into statistics other than those of asylums, and that the importance of the various dysentery bacilli in the causation of disease of the alimentary canal all parts of the world, but particularly in the tropics, has been considerably underestimated.

At the quarterly meeting of the Medico-psychological Association, held in London on 25th November, 1913, Dr Sidney Coupland presented a chart (3) of the dysentery incidence and mortality in the 95 lunatic asylums existing

in England for each year of the decade 1903—1912. The following is a *verbatim* quotation from his paper—

"It will be seen that out of the 86 asylums which existed in 1903, there are 34 in which cases of dysentery are reported in each year of the decade, 35 in which cases occurred in from 5 to 9 of these years, and 13 in which cases occurred in only from 4 to 1 of these years, there being five asylums in the last category * * *. Lastly in four asylums, no cases were reported in any year. Of the remaining nine asylums, one was opened in each of the three years, 1904, 1905 and 1909, and two in 1906, 1907 and 1908, respectively. Cases of dysentery were reported from the year of opening in three, in every year but the first in one, and in seven out of nine years in one."

* * * * *

"Selecting from the list only those institutions in which the average annual dysenteric incidence was not less than 20 per 1,000 (or 2 per cent) of the total number of inmates, we find these amount to 27, of which number, 20 had cases in each year of the decade, and two were asylums opened subsequent to 1903."

According to this chart, the dysentery incidence rate reached 125 per 1,000 (or 12½%) in Cardiff Asylum in 1911 (this asylum was opened in 1908), 105 per 1,000 (or 10 ½%) in Hellmingle in 1911 (an asylum opened in 1903), 110 per 1,000 or 11% in Bexley in 1906 (an asylum opened in 1898). In other words three of the newest and presumably most up-to-date and sanitary asylums in England and Wales recorded dysentery incidence rates of over 10% on the total number of patients, in one year or other of the decade. At the other end of the scale comes Cornwall Asylum, an institution opened in 1820 the fifth of its kind opened in England which does not record a single case of dysentery in the same ten years.

It must not be considered that the conditions in the ten years under review were in any sense exceptional. A study of Dr H. S. Getting's history of dysentery in the Wakefield Asylum (Yorkshire, W.R.) (4) will show that dysentery has existed in that institution since Thomas Umpleby of Leathly was admitted on November 30th, 1818, with dysentery on him one week after the asylum was opened. Since then it has waxed and waned, waned and waxed again. Dysentery cases occurred in 86 years out of 95, and in 1912 there were 78 cases and 35 deaths. The records of other English asylums could doubtless tell similar tales.

Dr Getting's concluding paragraphs are as follows—

"This article is not brought forward merely as a historical recital, but because I believe the lessons it teaches are of value, as the lessons of history always are."

"For it shows that no amount of sanitation will stamp the disease out. It is no question of unsanitary or overcrowding, of water-supply, or of the other factors that have been proposed. They are only side issues, important in their way, but side issues all the same. It is the actual infection that matters, it is the chronic cases, the 'carriers', who keep the

asylum infection going, who originate fresh cases and epidemics. They form the keystone of the problem, and must be detected, and isolated before any permanent good can be done."

"It is with the infective person that we must deal and not merely the ailing condition. It is difficult matter to detect them, I know, but it has to be done if the disease is to be eradicated. Much can be done by a strict segregation of all patients who have dysentery, or by a routine examination of the stools."

"But the real hope lies in the laboratory, and I believe that, if the problem were investigated, it would not be long before the pathologist would be able to detect these carriers to day, as he detects the typhoid or the syphilitic. And if this could be done, dysentery would soon be as much a thing past in our asylums, as it is amongst the population."

In the Scottish and Irish Institutions, dysentery, although present, would appear to be by no means so common. The number of deaths from dysentery and diarrhoea amongst the pauper patients in the Scottish Asylums, for the five years 1902 to 1906, is stated to have been 71 all told, or about 14 deaths a year, a proportion of about 0·08 per 1,000 patients resident. The number of deaths from the same causes in the Irish asylums in 1912 worked out at about 24 (out of 21,000), or 0·08 per 1,000 patients resident, a figure identical with that of the Scottish asylums.

The writer of this note believes that these figures give a wrong idea of the prevalence of the disease, at least as far as Ireland is concerned. In Clonmel Asylum, from 1902 to 1905, when the writer was Assistant Medical Officer, dysentery was a prevalent disease, but was very mild in type, and the death-rate therefrom was practically *nihil*. Saline treatment was invariably employed.

From the stool of one of the few cases which terminated fatally during this period, McWeeny(5) isolated a mannite-fermenting bacillus, which, unlike the typical Flexner, did not produce indol. It was agglutinated by the patient's blood serum, and was extremely toxic to rabbits.

Coming to Indian asylums, one is faced with the difficulty that no table of diseases for which patients are admitted and die, is included in the asylum reports for each province, and one has to depend on the remarks in each report to learn whether dysentery, colitis, and diarrhoea were prevalent in the asylums during the year under review. Even from the meagre information so afforded, however, the prevalence of dysentery in Indian asylums is sufficiently indicated.

In the report on the Bengal asylums, for example, we find that there were 52 admissions for dysentery in Dacca asylum in 1912, and that dysentery accounted for 11·96 per cent of the total deaths in the lunatic asylums of the premier province for that year. In the Agra and Oudh asylums, there were 41 admissions for dysentery and ten for diarrhoea during the same year. Thy-

figures for the Lahore asylums for 1912 are not available to the writer, but dysentery and diarrhoea were stated to be very prevalent in 1909, 13 patients dying from diarrhoea and nine from dysentery. In the Naupada asylum, Bombay, in 1912, 42 deaths out of 76 were due to dysentery and diarrhoea. In Nagpur asylum, Central Provinces, five deaths out of 29 in 1912 were due to dysentery. In the Patna lunatic asylum, in the same year there were 26 admissions for dysentery and seven for diarrhoea. In the Tezpur asylum, dysentery is said to have been prevalent in the same year, although it only accounted for four deaths. In Rangoon, dysentery and diarrhoea are said to have been epidemic, and in the Singapore lunatic asylum, dysentery accounted for 22 out of the 64 deaths, or over 34 per cent of the total mortality. In the Madras asylum, dysentery has been present in every year, since the present site was occupied in 1871, with the solitary exception of the year 1901, when no case was recorded. The greatest number of admissions recorded in one year was 63 in 1891.

The questions which obviously arise are —

I. Is asylum dysentery in India, identical with the bacillary dysentery of the English asylums, and if the diseases are not identical, in what does the difference consist?

II. By what measures may we hope permanently to eradicate the disease from the Indian and English asylums?

III. What is the best treatment for the individual cases of the disease, in India and in England, with which we are acquainted?

In endeavouring to discover answers to the above questions, a brief analysis of the dysentery cases which have occurred in the Madras asylum for the past three and a half years may be of some use. But as the investigations have as yet scarcely progressed beyond the initial stage in some of the most important aspects of the disease, any conclusions embodied in these notes can only be regarded as provisional, and liable to modification with further experience.

THE MADRAS CASES

The incidence rate of dysentery in an asylum may be calculated in two ways. The number of attacks of dysentery in a year may be shown as a percentage on the daily average number resident for that year. This is the method employed by Dr Sidney Coupland.

According to this method, as there were 197 attacks of dysentery in the Madras asylum during the 44 months under review, the *yearly* rate of dysentery incidence works out at approximately 9·5 per cent of the daily average number of patients resident—a high incidence rate assuredly,

but actually lower than that which obtained in several English asylums, amongst others, in Cardiff and Hellingsly asylums in 1911, although both these British asylums were built and opened within the past twelve years.

Another method of estimating the prevalence of dysentery in an asylum for a period of years, is to express the total number of patients attacked as a ratio of the total number of patients who came under treatment during that time.

According to this method, as 146 patients were attacked in Madras and as 1,205 patients came under treatment during the 44 months in question, the proportion of the patients attacked to the patients treated during that period works out at 12·11%.

Of these 146 individuals, 29 eventually died of the disease—a mortality of 19·8%.

Of the individuals affected, one had six distinct attacks, five were attacked four times, five had three attacks, twenty-one had two attacks, and 115 were only attacked once. The stay in hospital varied within wide limits according to whether the disease was acute or chronic in type. The longest stay of any patient in hospital was 128 days, and the shortest one day, the average time which elapsed before the patient was discharged from hospital as cured being about 40 days, but for a considerable part of this period, all symptoms of dysentery would have disappeared—the patients receiving hospital diet for the purpose of rehabilitating their strength and picking up their weight. The stools were examined microscopically in every case, and in the case of 86 patients, plate cultures were made, and the plates were incubated and the growths investigated at the King Institute of Preventive Medicine, Guindy, by Assistant-Surgeon M. Kesava Poi, M.B., who also prepared the autogenous and polyvalent vaccines used in the treatment of the cases and in the prophylactic inoculation of the patients, and is at present engaged in the investigation of the agglutination reactions, the toxicity, etc., of his strains and will publish his complete results at a future date. MacConkey's bile salt lactose agar was the medium employed.

Before coming to the figures, it may be well to state that it was found quite impossible to isolate dysenteric bacilli from feculent stools. Such bacilli could only be isolated from mucoid stools, and then the mucus had to be repeatedly washed in sterile saline solution before plating, so as to remove every trace of feculent matter, and leave a clean, sometimes bloody mucus. Otherwise, the plate was swamped by growths of other bacilli. Even after selecting stools and taking these precautions, positive results were obtained in only 43 instances out of the 86 cases examined—a proportion of 50%, although every case plated was clinically a case of dysentery. Furthermore

in many of these cases the patient's stools were plated several times, and a positive result was obtained only after repeated platings. Success was obtained only when the stools were freshly passed.

These experiences appear to the writer to be of considerable practical importance, regarding the diagnosis of bacillary dysentery. It would appear that the failure to discover dysenteric bacilli in the stools is in itself of little importance in the diagnosis of the disease, as if the stools are kept for any considerable length of time before plating, or if anything but well washed mucus free from fecal matter is plated, a negative result may be expected. Consequently it seems logical to conclude that the practice of sending unplated stools by post, in a sealed vessel, to a laboratory for bacteriological examination, in the hope of isolating the bacilli of dysentery is only waste of time, and that any inferences drawn from negative results in such cases, are quite valueless.

Practically the diagnosis between the amoebic and non-amoebic forms has to be made from—

- (a) The presence in, or absence from, the freshly passed mucoid stools, of amoeba hystolitica
- (b) The isolation by bacteriological methods of the specific micro-organisms from the stools, bearing in mind that, (a) a negative result is of little value, and (b) that a mixed infection is of course, possible.

There is one clinical observation which seems to be of value namely, that acute cases, with fever lasting about three days (although the dysentery may persist longer) in individuals, who have not previously suffered from dysentery, are almost certainly bacillary.

In Madras Asylum one could not help being struck with the fact that of five undoubtedly amoebic cases, three occurred in Europeans, and the fourth in an Indian who had lived out of India for many years, and who fell ill with dysentery three days after his arrival from Singapore.

The success or failure of emetin treatment is of little use from a diagnostic point of view—except in cases where the ordinary forms of treatment have been tried and have failed, and where emetin succeeds. In such cases, the conclusion apart from all other evidence, that the disease is amoebic seems justified. But the fact that an acute case of dysentery gets well on emetin treatment, plus a diet of curdled milk or whey, plus (probably) purgation by salines or castor oil, is no proof at all that emetin has had anything to do with the recovery. As will be seen from Table VI, 20 cases were treated with hypodermic injection of emetin hydrochloride, and with the exception of the cases in which amoeba hystolitica had been found microscopically, emetin appears to have had little influence in the disease one way or the other.

As regards microscopic examination, it will be seen from Table II, that amoeba hystolitica was present in five cases. Of these, three were Europeans, and one was an Indian lately returned from Singapore.

The three cases in which balantidium coli were found rapidly succumbed to the disease, and the presence of this enormous ciliate would seem to be of the gravest prognostic significance.

Among the members of the staff who are known to have suffered from dysentery during the period under review, were two waifers, an office clerk, and the superintendent. The attacks (except in the case of the clerk who had amoebic dysentery) were slight. One of the waifers harboured the Shiga and the Superintendent the Flexner type bacillus.

PROPHYLAXIS

The measures taken have been—

I The treatment of all dysentery cases in the isolation sheds.

II The segregation and observation of convalescents for six months after recovery (in the case of criminal patients—on account of difficulties of accommodation, this can be only partially carried out). It is noteworthy that Dr. Bolton holds that, in asylums, isolation of dysentery cases should be permanent!

III The incineration of the excreta of all dysentery patients and of convalescents.

IV The boiling of drinking water.

V Prophylactic inoculation of all patients exposed to infection. Of these, V is the only one calling for detailed notice.

Prophylactic inoculation was begun in November and December 1913, when 533 patients were inoculated, and the remaining 50 cases kept as controls, a number which has now swollen to 130 by new admissions (up to July 1914). The vaccine used was prepared from four Flexner and four Shiga strains, isolated from stools of previous dysentery cases. It was made up in a bacillary emulsion of the approximate strength of 100 million dead bacilli in one c.c., and two c.c. were given hypodermically, twice, to each patient, with an interval of 10–14 days between the inoculations.

Reaction was extremely slight, and occurred chiefly in the case of individuals who had previously suffered from dysentery—a fact which may be of some importance from the diagnostic point of view, and which will be further investigated. Even in these cases, the general temperature did not exceed 100°F. In six cases, localised tissue necrosis occurred, with the formation of small abscesses containing a "pus" which proved sterile on bacteriological examination. The possibility of a little hot vaseline having been inject-

ed accidentally with the vaccine cannot be excluded in these cases.

The results of this inoculation in 1913, from the point of view of prophylaxis, have been unsatisfactory (*vide* Table V), and the agglutination tests afterwards carried out have given contradictory results, especially as regards the mannite fermenting or Flexner type of organism. An emulsion containing 2/3 Shiga type and 1/3 Flexner type bacilli was used in inoculating all the asylum patients in August of this year.

Post-mortem Records.—During the 3½ years under review 242 deaths occurred in the asylum, and *post-mortem* examinations were made in 167 of these. In 34 of these *post-mortem* or 20.4 per cent dysenteric lesions of the bowels were found, in another 25, or 15 per cent, tubercular ulceration was present. But in not one case was any trace of abscess of the liver found. The writer has searched the asylum *post-mortem* records in vain for any record of liver abscess having been ever found *post-mortem*. This fact in itself is an extraordinary one, and goes a long way to prove that the dysentery, which has been endemically present, is essentially bacillary in type.

General Treatment

All patients who are reported as having passed a dysenteric stool are sent to the isolation hospital, and put upon castor oil emulsion ʒii to ʒi, of which ʒii are given, followed by ʒii given every three hours for the first 48 hours. The writer remembers the success of saline treatment in the asylum in which he worked at home. His Superintendent's instructions to him were "Turn your cases of dysentery into cases of plain watery diarrhoea, with Glauber's Salts and then, if necessary, cork them up with a little opium."

This plan worked excellently in Tipperary, but was a failure in Madras. The Madras's constitution could not stand it. The writer employed it, in his own case, with complete success.

In addition to castor oil by the mouth, rectal lavage with boric acid solution followed by albaigin, grs. 4 to the pint, alternating with Pot. Permanganate Solution, twice daily, is now practised from the beginning. The solutions are left as possible in the bowel, the foot of the patient's bed is raised on blocks 18 inches high, and patient is made to lie on his right and left side alternately.

Serum treatment was tried in the present year for the first time. So far fifteen cases have had one or more doses of serum, with good results, as will be seen by reference to Table IX. The impression left is that serum works well and rapidly in acute cases with fever, but that its effect is transient, and that several doses are

required to produce any permanent effect on the disease. Both Kasauli and Lister Institute sera were used. The great expense of anti-dysenteric serum (Rs 3-12-0 per dose) practically rules it out as a routine measure.

Many of the Madras cases either begin with conditions of glossitis and stomatitis, or develop these conditions during the course of the disease. The stools then become frothy, copious and very offensive, and a condition indistinguishable from sprue becomes established. Iodine internally and Bulgarian milk have been tried for these cases, but as a rule the patients go on for months or years, in a stuporous condition, swallowing large quantities of fluid nourishment, and absorbing little. The final P.M. reveals an alimentary canal thinned and denuded of epithelium from the mouth to the caecum, and the inevitable signs of dysenteric ulceration in the colon and sigmoid. The question as to how far "Sprue" is a legacy of bacillary dysentery seems to call for investigation.

Inoculation with polyvalent or autogenous vaccine was tried in 1911 as treatment in 37 cases. The difficulty of obtaining autogenous vaccine in cases of dysentery is very great, as it is only exceptionally that the bacilli can be isolated from the stools, and a mixture of "house" strains was found more convenient.

The results were so bad (*vide* Tables 7 & 8) that this method of treatment was abandoned. It must be added, however, that it was used on most unfavourable cases, and also, in all probability, the dosage used was too large. A trial is now being given to inoculation with small doses beginning with one million bacilli—and the effects are being carefully watched.

CONCLUSIONS.

The general impression which the experience of the last 3½ years at Madras and the examination of Indian asylum records leave upon one's mind is exactly that which Dr H. S. Getting's delvings into the history of Wakefield asylum left upon his—namely, the extraordinary preservation and ineradicability of asylum dysentery. One is driven to believe that individuals who have suffered from bacillary dysentery, especially if ulceration and thickening of the bowel have occurred, remain "carriers" for years, if indeed they ever "recover" from the disease, that the immunity conferred by an attack is a short lived one, and that conferred by inoculation, if any, is little better. That a chill or a slight lowering of the vitality of the carrier will precipitate another exacerbation of a disease never completely eradicated, and furthermore that there is a definite relationship between bacillary dysentery and sprue.

Regarding the bacteriology of the disease, different bacilli have been described. Shiga, Kiuse

Flechner, Morgan, His, McWweeney, Strong, and the investigations at El Toi have described different forms—the differences depending upon the fermentations of the various sugars and the production of Indol. Mr Kesava Poi found considerable differences in the various strains isolated from different patients in Madras. But broadly speaking, it may be said that the chief difference between English and Madras asylum dysentery is the greater prevalence of the extremely toxic "Shiga" type bacillus, which does not ferment mannite, in the Indian cases, and consequently greater severity of the disease in the latter country. In this connexion the writer would like to confirm the observation of Sir Leonard Rogers that there is a fulminating type of bacillary dysentery, indistinguishable clinically from Asiatic cholera. Several such cases occurred in Madras, and were treated with permanganates and hypertonic saline intravenous infusion, but the bacteriological examination of the stool demonstrated that the disease was not cholera.

Obviously the means by which we may hope eventually to eradicate dysentery from asylums are those by which enteric has been practically eradicated from the army, viz.—

I. The isolation of all carriers, until they cease to be such (which in chronic cases usually means isolation for the remainder of their lives).

II. The immunisation of individuals who are exposed to infection, by inoculation.

III. The adoption of the most reliable and up-to-date sanitary methods for the preparation of food, for the protection from contamination of food and drinking water, for the treatment or destruction of excreta, for sewage removal, and for housing and clothing the population we deal with all this with two objects

(a) to raise the standard of general health as high as possible, and (b) to minimise the chance of the ingestion of infected or contaminated matter by the individual.

These are the only ways in which general sanitation affect the matter.

But in carrying out of these measures, in the case of lunatic asylum populations, enormous difficulties arise apart from the questions of expense and accommodation.

These are—(a) as regards the disease itself.—

I. Bacillary dysentery varies in degree from a condition scarcely noticeable to a condition as rapidly fatal as Asiatic cholera. Very mild cases, if unnoticed, may go on to ulceration in the sigmoid region, and become chronic carriers, yet show no symptoms beyond the occasional passage of a little mucus or a little blood with a formed stool. Such cases are, amongst lunatics who do not complain of disease, obviously likely to occur. Even, if noticed, such cases are liable to be looked upon as cases of slight internal haemorrhoids. Bacilli of the "Flechner" type were

isolated from the stools of such a case in the Madras asylum

II We have no means of knowing when an individual ceases to be a carrier. As pointed out, it is practically hopeless attempting to isolate the bacilli from faecal stools, and the agglutination reactions do not help us. The only method which suggests itself to the writer is inoculation with a large dose of Shiga-Flexner emulsion, and observation of the reaction, on the lines of the 'Mallein' and 'tuberculin' tests.

The disease is very common amongst the general population. The post-mortem records of Madras Institutions bear out this statement. It is the exception to find a healthy colon post-mortem amongst hospital patients. Warders, cooks and sweepers suffer from disease, conceal it and treat it with indigenous medicines.

III A large portion of asylum patients are filthy in their habits, are coprophagia, or are earth, mud, and rubbish eaters. Their instincts are perverted or destroyed. Many are technically "wet and dirty," and even under most rigid supervision, cannot be prevented from easing themselves in the yards and grounds. When suffering they do not complain. The vicious circle is obvious—soil and room contamination can only be avoided by the provisions of impermeable floors and washable walls.

IV Prophylactic inoculation, so far, has not been successful.

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- (5) British Medical Journal, 1908
- (6) Journal of Mental Science, January 1914
- (7) Rogers' "Dysenteries," 1913

TABLE I

Attacks

One attack	115
Two attacks	21
Three attacks	5
Four attacks	198
Five attacks	5
Six attacks	147

TABLE II

Microscopical Findings

Amœba coli	19
Amœba histolytica	5
Flagellates and Ciliates	16
Balantidium coli	3
Ova of Hook worm	18
Ova of other worms	26
Total cases examined	146

TABLE III

Cultural Results

Cases examined	86
Mannite Fermenters (Flexner type)	25
Mannite non Fermenters (Shiga type)	18
Negative	43

TABLE IV

All Post-Mortem Examinations, January 1911 to July 1914

Total made	Signs of dysentery present		Tubercular ulceration of bowel present	Abscess of liver	None of foregoing
	Ulceration	Inflammation			
167	23	11	25	Nil	108

TABLE V

Statistics of Prophylactic Inoculation

Vaccine—Polyvalent { 4 strains, Shiga type
{ 4 strains, Flexner type
prepared from the stools of the asylum cases during 1912-13
Equal parts of each strain—1 cc of emulsion to contain 100 million killed bacilli

Dose—Two doses of 2 cc each, hypodermically at intervals of 10 days

Number of patients inoculated	{ European 20 Indian 507
Number of patients not inoculated	{ European 99 Indian 31
Number of patients inoculated, and attacked after date of inoculation	{ European 2 Indian 32
Number of non inoculated attacked after date of inoculation	{ European 6 Indian 4
Number of inoculated attacked who had suffered from dysentery previous to inoculation	{ European 2 Indian 5
Period elapsed since inoculation to date	9 months

All patients who had ever suffered from dysentery were inoculated

TABLE VI.

Results of Treatment with Autogenous Vaccines in 1911

Number of cases treated	Doses used	Recovered	Died
Shiga type—3	20 millions 50 millions 100 millions at intervals of 6 days	{ 2	1
Flexner type—6	200 millions 500 millions 1,000 millions at intervals of 6 days	{ 4	2

TABLE VII

Results of Treatment with Polyvalent Vaccines (Shiga-Flexner Asylum strains, in 1911)

Number treated	Dosage	Recovered	Died
28	20 millions 50 millions 100 millions	{ 15	13

TABLE VIII.
Results of Emetin treatment.

Name	Race	Total emetin given	Day of disease, emetin treatment begun	Days disease persisted afterwards	Result	REMARKS
P. N	Ind	1 grain	5th	36, including two relapses	R	Flexner bacillus isolated with autogenous vaccine
V M	"	No record	No record	7	R	Also treated with poly vaccine, in small doses
R C	"	3 grains	2nd	13	R	Flexner bacillus isolated with autogenous vaccine
J P	Eur	No record	2nd	4	R	A case of amœbic dysentery
N H	Ind	5 grains	60th	130	Still in hospital	Ankylostome ova numerous. How a typical case of amoebic dysentery. Thymol treatment on several occasions.
V D K	"	4 "	19th	14	R	Shiga bacillus isolated
B L	"	No record	24th	Died 5 days afterwards		Shiga bacillus isolated. Balantidium coli present
A C	"	No record	5th	Died 6 days after ?		Nothing found in stools
S O	"	1 grain	6th	6	R	Shiga bacillus isolated
T Y	"	1 "		Died 7 days afterwards		Flexner bacillus isolated
Z A	"	1 "	4th	9	R	Kasauli serum
V L	"	2 grains	2nd	10	R	Flexner bacillus isolated
R L	"	2 "	9th	22	Still in hospital	Treated with Kasauli serum
D	"	4 "	4th	5	R	Nothing found in stools
A M	"	2 "	9th			A bad case of ankylostomiasis just admitted to the asylum from Natal. Dysenteric symptoms also present
V N R	"	5 "	3rd	4	R	Amœba hystolitica abundant. Amœbic dysentery. Singapore case
S	"	2 "	6th	6	R	Nothing found in stools
N P	"	4 "	3rd	12	R	Nothing found in stools
R	"	5 "	3rd	8	R	Shiga bacillus isolated
B R	"	2 "	6th	12	R	Nothing found in stools
				10	R	Nothing found in stools
						Flexner isolated, after which he was treated with serum

All the above cases received castor oil treatment in addition.

TABLE IX.
Twelve cases treated without Emetin

Name	Race	Treatment employed	No of days symptoms persisted	REMARKS
P H	Europ	Sodium Sulphate	4	Flexner bacillus isolated
M B A.	Mahdn	Kasauli Anti dgs serum, 40 c c	11	Also castor oil and albargin by rectum
J	Indian	Castor oil emulsion	3	Shiga type bacillus isolated
M J	Europ	Kasauli Anti dgs serum	8	Also albargin by rectum
F	Indian	Castor oil emulsion	5	Flexner type, bacillus isolated
B B	Do	Sodium Sulphate	5	Also albargin by rectum
M	Do	Kasauli Anti dgs serum and castor oil	5	Flexner type, bacillus isolated
S N	Mahdn	Castor oil emulsion	9	Relapsed one month afterwards, relapse lasted 6 days. Cultures negative
P	Indian	Ditto	6	Also albargin by rectum
B R	Do	Ditto	3	
S G N.	Do	Ditto	4	
P	Do	Ditto	5	Also albargin.
			15	Also suffered from malaria. Flexner bacillus isolated. Shiga type bacillus isolated and Pot Peimang. Also albargin

TABLE X
Results of Serum treatment (begun 1914)

Number treated	Dosage	Recovered	Died	Average number of days disease persisted after treatment
Kasauli Serum, 11	Each ampoule 20 c.c. one, two, or three doses according to severity of disease	10	1	
Lister Institute serum, 4			4	

SOME GENERALIZATIONS ON THE SCOPE, CONSTRUCTION AND ADMINISTRATION OF CENTRAL ASYLUMS IN INDIA

By W S JAGOE SHAW,
Captain, I.M.S.,
Supdt., Central Asylum, Yeovil

SOME time after the foundation of the British Raj in India it was considered necessary to provide some places for the segregation of the insane population, especially of those whose conduct had been such as to call for judicial enquiry and subsequent detention in an institution other than a prison. At that period in the world's history insanity being looked upon either as a visitation of God, or as a possession by the devil, it was considered advisable that those who were afflicted should be detained in some institution, and so prevented from injuring the sane or insulting their conventions. It was perhaps natural that the asylums provided for insane should have then partaken largely of the prison type, and that they would have borne no resemblance to the hospitals which modern civilization considers suitable for the reception and treatment of those afflicted with mental disease. Even among European nations at the period to which I refer lunatics were not relegated to asylums until their conduct had rendered them further freedom impossible, and chastisement and fetters had proved ineffectual methods of treatment. It is impossible to say when insanity was first considered to be disease. Gradually, very gradually, a more enlightened conception of the function of an asylum grew, and mainly owing to the initiative and influence of the medical profession, the loathsome dungeons to which the unfortunate insane of the 18th Century were consigned, have given place to the up-to-date hospitals which a more enlightened civilization commands.

As I have stated until comparatively recently the European did not consign his insane relative to an asylum till he was compelled to do so. Now the case is almost the reverse, and asylums

are resorted to early, it being the almost universal lay opinion that early treatment in mental disease is not only advisable, but necessary, if effective recovery is to be hoped for. In fact, further than this, the "voluntary boarder" system provides a "rest cure" for those threatened with nervous or mental breakdown, and one of which many persons avail themselves eagerly.

What has happened in Europe generally must happen in India public opinion is gradually becoming more enlightened and with the early admission of insane to the asylums must come an urgent demand for increased and suitable accommodation. When one considers the figures given below one must be struck with the great difference between the insane population as taken from the last census, and the asylum accommodation in various Indian provinces, whose figures are just now available.

	Insane population	Asylum accommodation	Criminal lunatics
Bombay	6,270	1,421	224
Madras	8,309	1,078	231
Bengal	19,442	1,277	596
Punjab	6,401	959	188
E. Bengal and Assam	3,068	303	100
Bihar and Orissa	4,138	344	137
Burma	9,582	790	324

In comment on these figures I would however point out that in this country people are not as a rule considered insane unless they are maniacal and dangerous. It is only for these cases that the obsolete term "mad" is reserved in popular parlance. Hence the figures showing the "insane population" are most certainly far from correct. When will people learn the importance of recognising the first symptoms of departure from the normal sane condition of the individual?

The necessity for providing adequate asylum accommodation for the insane population of India has not yet arisen, but that it must be expected in the near future is to me evident. In addition it may be argued that the extraordinarily high proportion of so-called "criminal lunatics" in Burma and Eastern Bengal and Assam is an index of failure in dealing with the problem of the proper segregation of the insane in those provinces. A "criminal lunatic" in India is generally speaking a person who has been permitted to be at large in an insane condition until he has committed some offence punishable under the Criminal Procedure Code.

General hospitals in India are up-to-date and wonderfully well constituted for the requirements and conditions of the country. The only reason that the asylums are not quite on the same footing is because there has been no popular

demand for such institutions, largely due to the ancient and erroneous idea that mental disease is something occult and mysteriously ordained, and that treatment is quite useless.

There are, however, signs that this popular conception of insanity is now on the decline, but the idea of an asylum as a "Prison" rather than a "Hospital" is still widespread among all classes in this country.

I shall now consider the scope or field of usefulness required of an Indian Central Asylum. Such an institution should be capable of accommodating *in comfort*, the insane sent to it from the area for which it is provided. Unless distinct asylums are provided separately for Europeans (including persons of European habits) for Indians, and for "criminal lunatics," each Central Asylum should provide suitable quarters for each of these classes. Again, it is perhaps not correct to speak of Indians as a "class," as Parsis, Mahomedans, Sikhs, and all castes of Hindus must be included. The importance of accommodation being comfortable cannot be too strongly dwelt upon—personal comfort is an incomparably more important factor in promoting recovery from mental disease than it is in any bodily disorder. This is a fact so thoroughly recognized in Europe that it should be unnecessary to dwell on it here.

Separate cottages adequately furnished should be available for each first class European patient, and his diet and service should be suitable to his condition in life. Quarters designated for Europeans should be much more roomy than those for Indians, who in their own homes as a rule prefer small rooms to big ones.

In the European section at least two sections must be provided, so that chronic and repulsive cases should not mix with those of recent admission, and those who are recovering. At least two sections, preferably three, are needed for Indian non-criminal patients, and if there are a large number of "criminal lunatics" two sections with high walls are required for them. A detached group of rooms, preferably near the asylum office or hospital, is necessary for cases admitted for observation, and the hospital should be provided with several single rooms to allow of recent cases being kept in bed and under careful observation. The hospital should be in a central position, and contain wards and single rooms suitable to the various classes inhabiting the asylum. If there is a female section of the asylum the female hospital should be as near as possible to the male for ease of administration.

I think that in this country it is necessary to surround an asylum by a wall. Except when enclosing sections containing dangerous inmates, this need not be higher than 9 or 10 feet. Iron railings of some ornamental design are, I am convinced, the proper boundaries of the various internal sections occupied by one sex. These

should be about 7 ft. high and be fixed in a stone wall a foot or so high. Such railings are not nearly as prison like as walls of similar height, and lend themselves considerably more to the embellishment of the asylum.

As regards asylum construction in general I consider that stone is the best building material. I have recently had experience of reinforced concrete, and I cannot say that I have been favourably impressed. As a material it is, however, probably as satisfactory as brick, and certainly superior to wood. I have seen the warping of the wood of door frames cause fracture in the adjoining portion of the concrete wall and edges (e.g., those of window sills, &c.) crumble quickly and become unsightly. Further the concrete walls are difficult to decorate either in inside or out, and have to my mind a persistently barrack-like appearance. Further, I am not satisfied that two-storied buildings are possible unless stone (or brick) be the material used.

There is, I think, no reason why the "Pavilion" type of building now approved at home should not be utilised with modifications in this country. Such an asylum consists of a series of blocks connected by covered corridors. Any modifications on the English plan would in this country of course depend upon the class to be accommodated in each block. Each block would of course have its own special "airing court."

There is no point in erecting numerous small buildings for the accommodation of insane. At Yeravda, some small blocks contain single rooms for from 2 to 10 patients each, with an annexe containing a small bathroom, lavatory and W.C., and the largest accommodates 19 of which number 12 are in an association ward.

These blocks are far too small, and their number renders supervision very difficult unless a very large proportion of attendants to patients is available.

Take an asylum intended to give accommodation to 80 European males and 600 Indians (200 being criminal lunatics). The 80 Europeans could be quartered in two blocks and some 4 cottages as already described, therefore each block would shelter 38 inmates. The upper storey would consist of a dormitory for 15, and single rooms, and the lower of a dayroom and single rooms, the single rooms in each floor being on each side of a central passage. Verandahs should be provided on each floor, the upper one being possibly narrow and enclosed. In addition on each floor there should be three bathrooms, one store room, two water closets and two lavatories. Besides these two blocks there should be a block containing a large dining room and reading and recreation room, and the last two rooms should advantageously be of irregular shape, not rectangular, and convenient to each block in the European section. The

European kitchen should also be close up. Should the asylum give accommodation to females, a block for Europeans of that sex should adjoin that for the men, so that the one kitchen would serve for both sections. The asylum for Indians might well consist of ten blocks, each accommodating 50 in similar fashion to those suggested for Europeans, except that the day room on the ground-floor might be used as a dormitory. The bathrooms, however, had better be omitted. These 10 blocks would be in five sections—that is, be provided with five airing courts (or gardens)—and 4 blocks with 2 airing courts would constitute the criminal section. In each airing court plenty of shade should be provided by means of sheds, verandahs, &c. One dining room should suffice for each two blocks, and each should be provided with a scullery. As already stated each section would be divided from the next by an ornamental iron railing 8' high, not by a wall, and in one section adapted for the better classes a recreation or reading room should be located. If possible sections should be so arranged that two could be evacuated during most of the daytime.

An additional "Work section" with work-sheds of various kinds should be enclosed by a high wall. The size of this section would depend largely on the number of criminal lunatics in the asylum. The hospital section should be capable of giving accommodation to 100 persons. Fifty beds arranged in wards and single rooms, for persons suffering from bodily ailments, and fifty single rooms for new admissions and those more recent mental cases which require special attention and individual treatment. A dining room would be required here.

In one section there should be an extension containing a central bath house of about four baths, with hot and cold water laid on, and some four or five padded rooms. This might well be a section which could be practically evacuated by day, and be near the hospital and the European section.

As regards individual rooms the floors should be sloped so as to facilitate cleansing, there should be no edges, i.e., to window sills, &c., and when these would naturally occur they should be rounded or sloped off, and all light (electric lighting should be a *sine-qua-non*) should be of the nature of bulkhead fittings in the roof or ceiling.

It is necessary in this country that windows and doors should be barred, but the barring should be as unobtrusive as possible. In the European section for instance they might be in the form of strong iron window frame (without glass) each "pane" space being about 9" x 6½"—this to the European mind would not have such

a prison-like aspect as have the bars as usually seen out here. Various ornamental and curved designs in bars have been elaborated especially in Germany to obviate the "prison effect" conveyed by the ordinary barred window.

Single rooms for Europeans should have at least 156 sq feet of floor area, and those for Indians may be smaller with a minimum of 100 sq feet. Doors had better open outwards, and be so hung that the fullest possible view of the inside of a room can be obtained when they are shut. The locking arrangements should be on a master key system. It is only thus that ready unlocking of a room can be assured.

A laboratory should be a necessary part of every Central Asylum. This would naturally be as convenient as possible to the hospital and *post-mortem* room.

As regards the administration of a Central Asylum, it should never be forgotten that the institution is primarily a hospital, and that it exists for the purpose of curing the insane or ameliorating their condition. At present the Superintendent is the only member of the staff who is required to be a specialist in mental diseases. In addition therefore to being obliged to carry out all the "individual" treatment of the patients, and the laboratory work, he and he alone is responsible as Superintendent for the general management of the asylum. There can be no doubt that the more time and close attention the doctor is able to give to individual cases, the better will be his results. According to the present procedure if the Superintendent gives this time to his numerous patients the rest of his work suffers, and if he devotes his time to the business, management, &c., the patients suffer. He cannot do both duties satisfactorily. I therefore consider that in every asylum of 300 to 600 inmates there should be an Assistant Superintendent equally qualified with the Superintendent, and under them an Assistant Surgeon and two Sub-Assistant Surgeons. This would not be considered an excessive staff for any other hospital of 300 beds in this country. Up to date in Indian Central Asylums, the work of Sub-Assistant Surgeons is practically confined to the treatment of the injuries and bodily disorders of inmates, and the administration of medicines by direction. They therefore do not fill the position of the Assistant Medical Officers of Asylums at home, who each note and study especially the cases in the wards of which they have charge. This is the sole duty of the usually highly qualified Assistant Medical Officers of English Asylums. The Superintendent could, I think, be relieved of a great deal of unnecessary and unproductive work if the Steward were given more extended powers and responsibility than has been the case up to now. At least the signature of the Steward

to such papers as indents on contractors supplies for diets, &c might be considered good. In an English asylum the Steward arranges independently for diets, extras, &c, as ordered by the Medical Staff.

The question of the proper education of asylum attendants is a very important one. It is very difficult to induce Indians of good class to take kindly to asylum work, and still more so to get those who are employed to learn the rudiments of asylum nursing. I think the passing of a simple examination in 'the duties of attendants on the insane' should be insisted on before any attendant is confirmed in his appointment.

Finally as regards the work to be expected from asylum inmates—the employment allotted to them must vary greatly.

If the asylum contains a large number of "Criminal lunatics" and consequently a large proportion of sane inmates, such occupations as weaving, darning, matting, cane-work, milling, &c, can be carried out with profit both to asylum and inmates. With a non-criminal and hence an insane population a little milling and loomwork may be possible, but the main form of employment must be weeding and gardening, and such asylums—indeed all—should be so situated and supplied with water that a good income can be derived from the sale of garden produce. Personally I am very strongly against any kind of compulsory labour for the insane, and think it a crime to expose recent cases to any form of tiring or absorbing work. Asylums should be as self-supporting as possible, and suitable inmates can be easily encouraged to perform useful work.

In conclusion, I would remark that many of my "Generalization" may appear elementary, obvious, or dogmatic.

To those of this manner of thinking I would however reply that my main object in this paper is to call attention to the main ideals of asylums for the insane, and the broad results of my experience of several asylums, with the object of assisting in the necessary standardisation of asylum construction, &c, in this country. Certain main principles must be decided upon before the smaller details come up for consideration, and I can point to asylums in which nearly all the "desiderata" I have mentioned—simple though they appear—have been absent or ill-considered.

NOTES OF TWO CASES OF HYSTERIA IN MALES

BY P HEFFERNAN,
CAPTAIN, I.M.S

First Case—A B European, father Spanish, mother English aged 22, admitted to the Madras

Asylum as a voluntary boarder on 13th September 1913.

History—Patient was transferred from a vessel in Madras harbour to the General Hospital, Madras, for "fits," and, as his case was considered unsuitable for that institution on account of his violent behaviour while in the "fits," he entered the asylum voluntarily.

Appearance, etc—A handsome well set-up gentlemanly young fellow, had a deep scar on left forearm which he said was due to his rolling on a glass tumbler while in a fit in his cabin. Stated that he was educated at (an English public school). Is perfectly rational and gave an excellent account of his illness.

According to his account he had been getting fits of a peculiar nature for four months before admission. He had his first fit on board a steamer at Aden (on his way to India). He was on his way home again when sent off his boat at Madras. Meanwhile he had been under the treatment of several medical men. He was given a special cottage, a low epileptic cot. with a mattress on either side, and two warders were detailed to observe him constantly.

He got fits daily from the night after his admission, as a rule he had several in succession. Immediately preceding an attack, he became dreamy, would not respond to questions, and usually lay down. Sometimes he subsided quietly on the floor, but never fell as if shot. After a short period of clonic spasm, the attack proceeded in one of three ways. Most commonly the "arc en cercle" position was assumed, patient rested on his heels and his occiput, and jerked his pelvis up and down in a manner suggesting the movements of coitus. Less commonly he rolled over and over from one side of his room to the other, or got upon his feet and ran round his room as if trying to escape, upsetting and breaking any articles of furniture which came in his way. The duration of the attacks varied from a few minutes to three hours.

When patient came to himself he was dazed, pale, and often bruised, and professed complete amnesia for all that had occurred.

The occurrence of the fits was in no way affected by the administration of bromides. A Wassermann reaction gave a negative result.

After the patient had been in the institution a week, and the diagnosis established, the following story was elicited after considerable resistance.

Patient, previous to leaving for India, had been engaged to be married. One day, when accompanied by a male companion, he met his fiancée, and had, perforce, to introduce his "friend"—a thing which he would not otherwise have done, as he did not consider him a suitable person for

his fiancée to know. Soon afterwards he left for India.

At Aden, he received a letter from a near relative informing him that his fiancée had been found by the writer of the letter in a situation which admitted no doubt of its impropriety with the man whom he had introduced to her. The details of the situation were given.

He had his first fit in his cabin the following night.

Previous to my conversation he in no way connected the two events, but put the occurrence of his fits down to the fact that he was reading hard for an examination while on board.

The fits were at first infrequent, but the condition steadily grew worse. His relative's unfortunate story was confirmed by a letter from his fiancée—admitting her faithlessness, and breaking off the engagement. Patient stated that his one object in life now was to get home and thrash his false friend.

No attempt at free association, word association, or dream analysis was made, but enquiries concerning his early life elicited affective over-reaction concerning masturbation of which he expressed the utmost horror—stated that it made cowards of men, that he could tell at once whether an individual masturbated or not, in fact, he "protested too much."

He had several fits during the night after this conversation and then his fits ceased completely. He became cheerful and happy, played tennis, etc. He next developed an acute inflammatory tumefaction of both external auditory meatus, and complained of unbearable pain. Leeches, ice, and finally scarification were employed, and patient was put under the influence of morphine. The condition subsided in five days and patient continued free from all nervous manifestations up to the time of his discharge, on 31st October 1913, that is to say, for a period of more than a month. His total stay in the asylum was 48 days. He left at once for Europe.

Case II—C D, Indian (Brahmin), aged 38, married, 4 children, admitted to lunatic asylum as a voluntary boarder on 28th March, 1914.

On admission, appearance miserable, speaks in a whisper as he declares he has lost his voice, complains of great abdominal discomfort, suffers from intermittent convulsive contractions of his abdominal muscles and diaphragm accompanied by a whooping or choking noise—a greatly exaggerated hiccough, tongue coated and flabby. Is an air swallower, swallows gulps of air until his stomach is distended, when he eructates the air again noisily. His tonsils are enlarged and he shows signs of old adenoids. Has a "tender spot" over his stomach, and a discolored patch of skin over left malar bone. No areas of anaesthesia.

Previous History—Two years ago he was given leave from his office, as he complained of

abdominal pain, giddiness, nervousness, and inability to do his work. His family history is stated to be normal.

He declares that his illness began one night two years ago, when he saw a "dolly" (an image, figure or idol), whirling round his bed. It resembled a huge rubber doll—a female figure. When questioned as to the nature of this appearance, he whispered—"Some think it was a disorder of my sight, and some a manifestation of sorcery or witchcraft."

His letters and conversation were quite rational but he was emotional and depressed, wept copiously, and begged that something might be done for him.

A few days after admission he complained of sleeplessness. I attempted to get him to sleep by verbal suggestion, he went to sleep immediately and slept for several hours.

As he was obviously a suggestible individual it was determined to treat his aphonia and an swallowing by suggestion. To exclude organic disease, however, a laryngoscopic examination was determined upon, and when his tongue was forcibly drawn out and the mirror placed at the back of his pharynx, he roared out in a stentorian voice. He was at once engaged in a loud conversation, as light was admitted to the dark room and his aphonia was cured!

He was greatly pleased at this result, but his diaphragmatic spasm and wind swallowing remained. He was assured, however, that these conditions could, in time, be cured.

The induced current was applied to his diaphragmatic and gastric regions. The sponges of the electrodes were soaked in saline solution and stroked along his intercostal spaces, and, following the distribution of the intercostal nerves, across the abdomen. The old-fashioned magneto machine was used as well as the battery and coil. After a week of this "Treatment," both the hiccough and the air swallowing had ceased, and the patient professed himself perfectly well. He became happy and jovial, gained weight, and left the asylum on May 1st, 33 days after admission, very pleased with his "cure."

Comment—In the first case, the relationship between the emotional shock and the hysterical attacks seems too marked to be merely fortuitous, nor does it seem necessary to delve into the infantile life of the patient to search for further causes. Anyhow, in this case, "Open confession seemed good for the soul." Perhaps, if "A B" could have thrashed his quondam pal the day he got the letter at Aden, he would have discharged the imprisoned "affect," the conflict would not have arisen in his unconsciousness, and the fits would not have occurred. It would appear that there is a price to be paid for repression, which certain types of mind can ill afford.

The second case is a typical example of a spurious cure. The kind of cure that is wrought by suggestion and hypnotism the disappearance of symptoms.

Relapse, in an identical or vicarious form, is, one would consider, extremely likely.

TWO CASES OF ANERGIC STUPOR TREATED WITH THYROID GLAND EXTRACT

By B S BHIDAY,

SUB ASST SURGEON,

Central Asylum, Yeravda

As it has been observed that some cases of anergic stupor and melancholia make a rapid recovery after an attack of acute physical illness, e.g., erysipelas Stoddart in his "Mind and its Disorders" recommends that an acute physical illness should be induced, and the illness that he selects for the purpose is hyperthyroidism. Two patients suffering from anergic stupor in the Central Asylum Yeravda were selected for this treatment and the following is a short summary of what happened.

Unfortunately both cases showed no signs of improvement at the end of the induced hyperthyroidism but aspects of the cases may not, all the same, be entirely without interest to those who may like to try the treatment for themselves.

Stoddart recommends the following *modus operandi* to be observed —

The patient is put to bed and treated for a week with thyroid gland conveniently in the form of tabloids. During the course of the

First	day, he takes 30 grs of gland =	6 tabloids, 5 grs each
Second	" 40 "	= 8 "
Third	" 50 "	= 10 "
Fourth	" 60 "	= 12 "
Fifth	" 50 "	= 10 "
Sixth	" 40 "	= 8 "
Seventh	" 30 "	= 6 "

at suitable intervals. The temperature should be taken regularly and the pulse carefully watched. Slight rises of temperature are unimportant, but irregularities of the pulse should be treated with digitalis and strychnine. Patients with a small thyroid must be treated with smaller doses of the gland.

The patient loses 5 to 10 lbs in weight during the treatment (in the two cases reported the loss in weight was 6 and 7½ lbs respectively).

The mental condition may change for the better during the treatment, but more often it deteriorates. Towards the end of the week patient begins to look physically ill. At the end of the week the ordinary treatment of melancholia, i.e., complete rest (in bed if possible)

and as much easily digested food as the patient can be got to take is started *de novo*. The patient should pass through a stage of short convalescence and recover, mentally and physically.

Case I — Gopal Govind Deshpande, Hindoo, Brahman, male, age 22, clerk in private service, admitted on 27th November 1913.

Previous history — Patient says that two years ago his "head used to turn round". He never fell down or became unconscious. He had continued fever at this time and was delirious. About nine years ago he had a quarrel about his ancestral property. Was addicted to ganja-smoking till two years ago not since then.

Present condition — Will sit for hours in one position if not disturbed, when asked anything he says he is tired of his life and begins to cry aloud. Looks sullen and morose. Is dirty in his habits. Does not take his food and does not sleep well. Hears men's and women's voices at night which frighten him.

Superficial reflexes normal. Knee-jerk diminished on both sides. No rigidity. Orientated for space not for time. Height 5' 4". Weight 100 lbs.

20th December 1913 — Lately made an attempt to escape. Will speak a little more than at first. Habits clean. Weight 94 lbs.

21st January 1914 — Very depressed still. Will hardly work and very rarely speaks. Weight 96 lbs.

30th January 1914 — No change in mental condition. Always sits on the floor with his head drooping down. Is very depressed. Will not speak or answer questions. Heart normal. Weight 98 lbs. Thyroid treatment commenced from to-day. Temperature, pulse, etc., as per chart enclosed.

Absolute rest in bed.
Tabloid Thyroid Gland (gr 5 each)
No 6 to be given during the day

31st January 1914 Marked Thyroid Gland Tabloids No 8
increase in pulse rate. Is otherwise the same.

1st February 1914 Is the " " " No. 10
same

2nd February 1914 No change Thyroid Gland Tabloids No 12
in mental condition

2nd February, 1914, 5 1/2 Pulse R/
small and irregular, 116 per minute
Liqr Strychnia Hydrochlor.
M 15

Finet Digitalis M 25
Aqua Menth Pip ad. ozs 3
M Ft Mist
One ounce twice a day

3rd February 1914 Pulse is the same Continue mixture
Thyroid Gland Tabloids No 10

4th February 1914 No improvement Continue mixture three times
a day
Rum drachms 4 twice a day

5th February 1914 Pulse better Thyroid Gland Tabloids No 8
in volume, 108 per minute No 6

6th February 1914 Looks brighter than before Weight
92 lbs (Lost 6 lbs) Continue mixture, etc
Omit all, except rest in bed.

7th February 1914 Answers questions more quickly. Is not so depressed as he was before the thyroid treatment.

17th February 1914 Improvement in mental condition continues Does not droop down his neck as before Weight 99 lbs

27th February 1914 Will not answer questions Is returning to his former depressed state of mind

10th March 1914 Is in the same depressed condition

24th April 1914 A typical case of inorganic stupor Will not move except to go to the latrine

Case II.—Usmanibeg Chandbeg, Musalman male, age 28, maker of fireworks, etc., admitted on 26th November 1913.

Previous history.—No family history of insanity is known so far Attributes his deranged mental condition to his late brother's indifference to his advice during his (brother's) illness, and his subsequent death, and also to quarrels between his late brother's two wives and children and himself.

Suffered from gonorrhoea two years ago Was addicted to alcohol but has not taken it for the last two years

Present condition—A stout plethoric man Is morose in appearance and manners Is quiet and apparently well behaved He says that he hears voices at times talking to him in English which he does not understand

Superficial reflexes exaggerated Knee-jerk normal No rigidity Height 5' 4 $\frac{1}{4}$ " Weight 146 lbs

20th December 1913 Improving Clean and quiet. Does no work Weight 137 lbs

21st January 1914 Slowly improving Talks very reluctantly Does practically nothing Weight 139 lbs

20th February 1914 In hospital with bubo in the right groin which has been opened and dressed

3rd March 1914 Wound in the groin is healing Thyroid treatment commenced from to-day Heart normal Weight 136 $\frac{1}{2}$ lbs Pulse temperature, etc., as per chart enclosed

	Absolute rest in bed			
	Thyroid Gland Tabloids No 6			
4th March 1914	Is the same	"	"	No 6
5th March 1914	Slight rise in evening temperature and increased pulse rate	"	"	No 10
6th March 1914	No change	"	"	No 12
7th March 1914	No change	"	"	No 10
	5 P.M. Temp 99 4 F			
8th "March" 1914	Mental condition is the same	"	"	No 8
9th March 1914	Same			No 6
10th March 1914	Same Weight 129 lbs (lost 7 $\frac{1}{2}$ lbs)			
17th March 1914	Is the same Weight 130 lbs			
20th March 1914	No change in mental condition Says he will do any work to which he is put			
24th April 1914	Does a little work at cleaning up and sorting out grain for grinding			

It will be seen from both the above cases that the thyroid treatment has failed to produce any acute physical illness and consequent change in the mental condition of the patients The tabloids used were those of Messrs Burroughs Wellcome and Co., and it is believed that they were flesh

I am greatly indebted to Capt O A R Berkeley-Hill M.B., I.M.S., for the valuable instructions

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YERAVDA

THE TREATMENT OF THE EARLIER STAGES OF SENILE CATARACT *

BY HENRY SMITH, V.H.S.,

LIEUTENANT COLONEL, I.M.S.,

Civil Surgeon, Amritsar

THE earlier stages of cataract we may divide roughly into two —(1) The stage we can treat without operation, and (2) the stage in which operation is necessary

(1) The diagnosis of the earliest stage of cataract does not appear to have received the amount of attention it deserves, if we are to measure such attention, by what has been written on the subject, partly, I suppose, because the ordinary patient pays little or no heed to deteriorating distant vision, so long as his vision is efficient for near objects, perhaps a larger proportion of this class of case comes to us earlier in the Punjab than to you in Europe. Cataract being so prevalent, and appearing in the prime of life, so most of my patients are quite aware of the possibility of the onset of cataract and fear it I have been devoting a good deal of attention to this subject for the last few years Among other patients, I have a large section of railway, whose officials I have to examine once a year for vision, when their vision falls below $\frac{1}{2}$ they are no longer fit for duty, such patients remain under my observation of necessity. The first symptom the patient complains of, especially railway officials and sportsmen, is that their distant vision is failing, no complaint being made of their near vision. A man's vision will be reduced to $\frac{1}{2}$ or even $\frac{1}{8}$ before he complains severely of near vision, at $\frac{1}{2}$ or better he seldom complains of vision for near purposes (I am assuming throughout that his vision formerly was normal) This is the characteristic symptom of the earliest stage of cataract—a symptom which should cause the general practitioner to send the patient to a specialist.

For our present purpose, let us carefully exclude cases with any fundus or vitreous trouble or any retiobulbar condition The vision not having fallen below $\frac{1}{2}$ we seldom observe any opacities in the lens—at $\frac{1}{2}$ we may find sand-like opacities or striae central or peripheral, above $\frac{1}{2}$ we nearly always find these conditions The cases in which the vision has been reduced to

* Read at the Oxford Ophthalmological Congress, July 1914

$\frac{9}{10}$, $\frac{8}{10}$ or $\frac{7}{10}$ without any opacity in the lens show loss of transparency merely. With an acetylene light, for example, you examine a healthy eye at the same time with one of these, and you observe that while the former is absolutely clear, the fundus of the latter appears as if you were examining it with a poor light. If we could put the difference of the clearness of the fundus of these two eyes in some formula we could estimate for scientific purposes the degree of loss of transparency. For the present we have to be content with the test card for this purpose. In diagnosing these cases for treatment, for statistical purposes, we have to be very careful to exclude all other diseased conditions which would interfere with vision. The treatment which I adopt would influence many conditions of the cornea, of the fundus and retrobulbar conditions, favourably, though combined with a corresponding stage of cataract, and would thus, consequently, vitiate statistics sometimes unduly favourably, sometimes unduly unfavourably.

Given a case which is sound apart from this stage of cataract, with distant vision reduced to $\frac{9}{10}$, $\frac{8}{10}$ or $\frac{7}{10}$, 25 minims of a 1 in 4,000, 5,000, or 6,000 solution of cyanide of mercury, according to the age of the patient (the younger the patient the stronger the solution required to produce a standard reaction), injected sub-conjunctivally, the patient being under the influence of cocaine locally and having had a hypodermic of morphia up to half a grain an hour previously, will, in my observation, within a month of the injection bring this patient's vision back to $\frac{9}{10}$ or even $\frac{10}{10}$, and at the end of three months he will be one better on the test card. The railway officials under my care, having to appear before me once a year, seldom fall below $\frac{10}{10}$ until they come under treatment. I give them a month's leave and an injection of cyanide of mercury, and by the end of the month they go back to duty with the full amount of vision required, that is, patients who have fallen to $\frac{9}{10}$, $\frac{8}{10}$ or $\frac{7}{10}$. I have a number of these men under observation for more than a year and so far the results appear to be enduring. I have an officer in the Indian Army, whom an invaliding board declared to be unfit for any further service on account of his eyesight. He was blind in one eye, and the other was in the early stage of cataract without opacities. He came to me, I asked the authorities to give him a grace of three months, at the end of this time he appeared before the same board with vision equal to $\frac{9}{10}$ and was passed for duty and is now either first or second in command of his regiment. He was treated about three years ago so the result may be considered as enduring. I have a number of sportsmen and others with similar results. I am sorry that I have not got records with me, as I came home on very short leave intending to do nothing. You worthy

secretary insisted on my contributing something to your proceedings, and I can thus only give you generalities and odd cases from memory.

Cases with sand-like opacities, if the pupillary area is clear of opacity, respond equally well to sub-conjunctival injections of cyanide of mercury. I have not so much hope of the permanence of the result in these cases. With vision down to $\frac{9}{10}$, the pupillary area being fairly clear, great improvement follows, but these cases rapidly relapse. (Throughout I am speaking of the light of the tropics.)

The number of patients in Europe (where cataract matures so much more slowly than with us) who suffer from the early stage of cataract, and who go to their graves before it has reached what we call immaturity, must be considerable. I would like to impress on those who may be disposed to devote attention to this line of treatment that as regards statistics they should be very careful in the diagnosis that they are selecting cases appropriate and uncomplicated by any fundus or retrobulbar condition. The dream of both patients and ophthalmologists has been to discover some method of dispersing (as the patient calls it) cataract, or preventing its development or both. I think we are on the track, I have little doubt of it myself. I do not, for a moment think that cyanide of mercury has any more potent action than other agents which would give a similar amount of reaction.

What is the cause of ordinary senile cataract? Can we argue backwards from the above facts towards a solution? Nutrition by osmosis never appealed to me. Is senile cataract due to starvation through a condition of the nutrient channels corresponding to atheroma of the arteries or is it due to a bio-chemical poison? Is the nutrient fluid of the lens manufactured by a special mechanism? and, if so, is that mechanism some of the gland-like cells of the ciliary region? If so, we could understand these cells assuming a pathological function and recovering therefrom under treatment. After all, this could only be the proximate cause, not the more remote one. The more remote cause of senile cataract in the Punjab seems to be connected with the dietary. The area of prevalence of stone in the bladder covers roughly the same area as cataract, and in all these areas the staple food is wheat, not rice. But on this matter I am not dogmatic, I have no theory, nor has any theory yet been advanced which will harmonize with the facts.

2. *The early stage of Cataract in which operation is necessary*—By this we mean a condition of the lens in which there are definite opacities sufficient to deprive the patient of useful vision, but in which there are varying degrees of transparent or living lens matter—a condition commonly known as immature cataract. The previous class

merges into this one by imperceptible degrees. From the patients point of view this class demands urgent consideration on account of the depressing influence that waiting involves, and the financial ruin that awaits them at the end of the waiting period. Those in extensive practice in the treatment of cataract will, I am sure, realize this fact. I have frequently been told by lawyers, for example, with mature cataract, that five years previously they could have paid any fee and would have paid any fee for relief, but that now they are practically paupers. So much for the waiting period.

My long distance patients are almost all of this class, and they come to me because their own surgeon refuses to operate, and tells them that they must wait the maturing of the lens. I think I may take for granted that the capsulotomy operation is not satisfactory for the treatment of these cases, and that the different procedures adopted for hastening the maturing processes are not satisfactory. I certainly would not get so many of these cases if other competent men found the direct capsulotomy operation of the maturing procedures satisfactory. The direct capsulotomy operation for these cases is very disappointing, owing to the difficulty, I might say impossibility, of removing the living lens matter from the capsule, its consequent proliferation, and the formation of a dense after-cataract, to which the iris is frequently tied down and which is very difficult to deal with. The latest ripening procedure is, I think, American, it consists in the deliberate production of a traumatic cataract, and the extraction of it within a few days of its production. This ripening procedure is, in my opinion, the worst of the lot. It implies among other things the liberation of lens matter into the aqueous chamber and as a consequent certain iritis, and the extraction of the lens under these conditions—the most difficult of all cataracts to deal with together with the fact that it courts serious complications.

The fact that senile immature cataract can be extracted in capsule as easily as mature cataract, and with as uniformly good results, is one of the strongest claims in favour of intracapsular extraction of cataract. The normal senile lens is just as easily dislocated as the mature senile cataractous lens. We come across cases of slowly ripening senile cataract, associated with disease of the thyroid which is probably to a large extent dependant on that disease. This is the type of immature cataract which we find not infrequently very difficult to dislocate. It is a type which I would advise the novice not to tackle with a light heart. We succeed in partially dislocating the lens adjacent to the wound. It refuses to move any further. We need to be ready without delay to slip a spatula behind it and to cause it to slide up the spatula by pressure from

outside the cornea, taking care not to wipe it between the instruments. To do this neatly is what I consider the last accomplishment of a highly accomplished operator. The normal senile immature cataract is one of the simplest of all cataracts to extract by the intracapsular method. In favour of intracapsular extraction we have the almost entire absence of iritis, we have no other cataract to deal with, and we can operate on cataract at any stage. It has been frequently laid down in both Europe and America that the eye of the white man is different from that of his Aryan brother. I have now done many cataracts on pure Europeans, many more in different degrees of dilution of European blood, and I can see no difference. A difference which probably does exist between the European and the Punjabi is, that in the Punjab we get cataract much earlier than you do in Europe or America, and that we probably thus operate on a higher proportion of people with a sound fundus, in which case the average resulting vision could be better. I have a number of men between 40 and 55 years of age in the Indian Army doing full duty including long range rifle shooting, wearing cataract spectacles.

Another objection raised to the intracapsular operation is that we cannot do without an iridectomy. This is not the case. The operation is as easily done without an iridectomy as with one, I have frequently done it through an opium pupil without difficulty. The same principle holds as regards an iridectomy in this operation as in the capsulotomy operation. It has also been objected that we do not obtain the key-hole pupil often observed after the capsulotomy operation. This is strictly correct, we get a U-shaped pupil. The explanation of the difference is that our iris is free, whereas the pillars of the coloboma following the capsulotomy operation are tied down to the after cataract, hence it is key-hole. I have frequently extracted the after cataract following the capsulotomy operation in cases with a beautiful key-hole coloboma. It was interesting to see that the key-hole disappeared and that a U-shaped pupil was the result. If you consider the matter from a mechanical standpoint, this reasoning and result will be evident. If you atropinize or homatropinize any eye with this key-hole pupil you will observe why it is key-hole.

I would like to draw your attention to the progress of intracapsular extraction in India. When I first began the teaching men intracapsular extraction, there were about 5,000 cataracts done yearly in the Punjab Province. In 1912 the number had increased to about 15,000, and in 1913 I understand that it is between 16 and 17,000 in the same area. These are practically all intracapsular, at least 90 per cent of them are. In other Provinces where intracapsular extraction is becoming the operation of election,

similar progress is being made. I think I can see the day not far distant when intracapsular extraction will be the operation throughout the Indian Empire, and when 60,000 cataracts a year will be done in that Empire.

I feel that this is rather a disjointed discourse, simply touching on the outskirts of a big subject but the interest is more in the discussion to follow than in this paper. I shall be delighted to answer any questions or give any details connected with the subject as far as I can, and I think it is better to leave more time for discussion than to read a longer paper.

It is my hope that in the near future some generous people associated with a generous Government will found a postgraduate school of ophthalmology in the Punjab—that area of the world in which diseases of the eye are most prevalent—and that it will be hampered neither by finance nor by spheres of influence. That this school will be manned by clinical and research workers sufficiently to utilize the enormous amount of material available for teaching. The Indian Empire requires such a school for the training of its own staff and for the doing of research work in ophthalmology—a matter which so vitally concerns the peoples of our huge Indian Empire. It should not be forgotten that it is the surgeon who commanded the confidence of the people of India for Western medicine and that it is he who still continues to command their confidence, and that without him there would be little respect to-day from the people of India for medicine or sanitation. Single handed and unofficially I have been doing what I could in the teaching of men (both Indian and European) in addition to my ordinary duties. This of necessity is confined to the clinical side and to a limited number. To cover the whole ground, and to do my official work would be, of course, absolutely beyond the physical capacity of one man. A school thus established would be in a position to give as fine a training in pathological work as any in the world. The fields open in research work are unlimited and seductive. In the clinical and operative side we should be able to give the finest course of training in the world on account of the vastness of our material. So I hope we will be able to welcome you to our Indian school of ophthalmology in the not distant future.

PREVENTION AND TREATMENT OF SEPTIC WOUNDS IN WARFARE

By F. W. SUMNER, B.A., M.B. (Cantab.),
Civil Surgeon, Saharanpur, U.P.

WOUNDS, inflicted by cold steel or firearms received in the field, come under three heads as regards their treatment.—

(1) Those where surgery must step in to guide might the natural powers of repair of the bodily tissues, e.g., bleeding vessels depressed fractures of the skull, ruptured abdominal viscera, etc.

(2) Those where these processes may be left to go ahead.

(3) Preventive measures against the wound becoming septic.

In warfare the bugbear of wounds is septic material, which almost invariably complicates them either from the skin, or from foreign substances introduced at the time of the receipt of the wound, or from septic material gaining access to the wound after its infliction, or from the bodily resistance of the patient being lowered.

If one could devise a means of preventing wounds received in warfare from going septic the number of fatal casualties would rapidly diminish.

The first field dressing, now in use is excellent as far as it goes but it only if immediately and properly applied, stops one of the modes of ingress of septic material viz., after-infection.

The process of repair in a wound—bacteriologically speaking no wound is absolutely aseptic—consists of (1) tissue repair and (2) the destruction of any living organisms in the wound and the neutralisation of their toxins this latter is determined by the number of organisms in the wound, their virulence, and also by the amount of damage suffered by the surrounding tissues i.e., cellular damage and disintegration inflicted at the time of the injury.

In the first stage of repair (first few hours) the organisms are few and mild and are feeling their way their toxic products are small. In the second stage (24 to 48 hours) they have vastly increased in number with a resultant increase in poisons. In the third stage (third day) the action of the numberless organisms now increased in virulence and their toxins have set up destruction of surrounding tissues causing pus to exude from the wound.

The defences of the body against this are that in the first stage some toxins are absorbed from the wound (the less damage of surrounding tissues the more easily the toxins are absorbed) and stimulate the production of antibodies in the body's tissues, these are able to get at the source of trouble more or less according as the local tissue damage is more or less in a clean cut operation wound where the tissue damage is at a minimum, the organisms are held in check and the wound heals by "first intention" with more damage the surrounding parts are choked up with leucocytes tissue cells organisms,

and a merry fight goes on between the offence and defence, the defence shuts off the body from the invading organisms but at the same time prevents the body from pouring its ammunition of antibodies into the invaders, the slaughter of cells is great and shews itself by the amount of pus produced, where the body cannot for some reason or other manufacture its ammunition of antibodies and no defensive wall is set up, septicaemia occurs, the invader's poison may have been so strong that the body's cells could not react and lay meat and unresponsive or the cells may have been in an unfit condition from chronic poisoning from diabetes, nephritis, etc.

The septic fever and other symptoms of the patient depend on how much or how little this manufactory of toxins is walled off from the body by the leucocytic and tissue cell barricade.

Wounds in warfare lend themselves even more than other wounds to autogenous vaccine treatment being flesh wounds and arising in a healthy body.

Many attempts have been made, more or less successfully, at vaccine treatment, such as the injection of stock vaccines, of vaccine prepared from a culture grown from the causative germ, and of vaccines prepared from pus direct also from the ingestion by the mouth of vaccine products.

The lines on which I have been working during the last few months are the injection or ingestion of bacteria-free and unmodified toxins for which I owe my thanks to a paper* by Dr. Duncan.

An animal's wound—granted he can get at it to lick it—and assuming that his general state of health is good—practically never becomes purulent, why? from the first he licks it and the saliva with the toxins licked from the wound is swallowed this results in antibodies being produced by his bodily tissues, being circulated in the wound, and paralysing and finally killing off all the organisms in the wound aseptic healing of the wound occurs.

It is especially to be noted that the animal is ingesting pure toxins, not sterilised at some 60 or other degrees of temperature, not preserved by adding antiseptics, not altered by keeping, but straight fresh from the human laboratory.

Here is a lesson of nature's to follow. Heat, antiseptics, keeping in stock, all alter, modify, or render inert the toxins hence the disappointing results, for the most part, of vaccine treatment.

Applying the natural autogenous vaccine treatment made use of by animals to wounds, and especially wounds received in warfare, the following procedure must be carefully carried out—

(1) No antiseptics to be placed on the wound

(2) Where possible the wound to be placed at once in the mouth and sucked for five minutes every two hours, or oftenest, for three days. Any foreign body to be taken out of the wound (bits of clothing, etc.), placed in the mouth and well chewed for five minutes. The saliva, juices, etc., from the wound or foreign body to be swallowed—the foreign body to be spat out.

(3) Where the mouth of the wound is small and tends to close up, retaining the discharges, it must be kept open by inserting a few strands of cotton, thread, bit of bandage, etc., to act as a drain.

(4) Where the wound is so situated that it cannot be placed in the mouth, take a piece of clean rag, dip in clean drinking water, squeeze out as much water as possible, and apply this to the wound to soak up the discharges after two hours place this rag, after wiping up the wound with it, in the mouth, chew well for five minutes as above-described, put on a similar piece of rag and repeat the process every two hours being especially careful, where the wound is small to take out the drain each time and chew it with the rag, and to put in a flesh drain at each dressing.

(5) Another equally efficacious method is to take off the dressing morning and evening only, place each dressing in one ounce of saline solution (sterile), allow to stand for twelve hours shaking occasionally, filter through a Pasteur-Chambeiland or Bekefeld filter candle, and inject subcutaneously 4 c.c. of the filtrate at once, i.e. two injections freshly prepared daily.

(6) Nothing but boiled water may be used to clean the wound at each dressing.

Of the above (1), (2), (3), (4) are simple instructions which could be printed and given to every soldier for his guidance.

As regards the "rag" it matters not at all whether it is aseptic or no as any organisms on it will by this method produce their own antibodies and their own destruction.

Where a wound is seen only after pus formation has occurred the quantity and virulence of the organisms do not allow of the above treatment here take pus M 6, Aq Dist ounce 1, stand for 12 to 24 hours, occasionally shaking, filter (a P C or B candle is most convenient), inject at once subcutaneously M 20 (i.e., pus M $\frac{1}{4}$), throw the rest away. The standing and agitation cause some autolysis of the organisms, so that the

* Autotherapy Practitioner, April 1914, by Dr. Duncan of New York City.

filtrate contains both endogenous and exogenous bacterial substances. Probably there will be no need of a second injection. Local redness at the injection site and a general reaction point to the vaccine doing its work properly.

Needless to say all operations must be done with the greatest antiseptic care or an abscess at the site of injection will result. This has happened several times under my observation but no ill-effects have followed the abscess being opened at once with a small puncture. It is to be noted that pure unadulterated toxins germ-free are thus injected, and the result compared to other vaccine treatment—well it is incomparable. The pus becomes thinner, smaller in quantity, and all smarting in the wound disappears. In a week if the wound is still discharging pus, another injection may be prepared in the same way and the same dose given.

The apparatus required for this treatment is inexpensive no cumbersome incubators media autoclaves etc., etc. It consists of the following.—

- (1) Pasteur-Chamberland's candle (one to each ten beds)
- (2) One 5" glass 1½" diameter (bottle or straight glass as used for wine) (to each candle)
- (3) Two 10 c.c. bottles (for carrying the vaccine to the patient) Ditto
- (4) Two one-ounce capacity test-tubes Ditto.
- (5) Two 3" pieces of glass rod (used for holding the candle in the glass when filtering) Ditto
- (6) A large aluminium pan to sterilise all candles, bottles, etc., at each operation (one for each hospital)
- (7) All glass 4 c.c. hypodermic syringe with two platinum-iridium needles (one to each hospital) to be kept in a bottle of spirit with some lysol in it
- (8) Two 6 oz bottles for preparing vaccine from dressings (to each candle) (wide mouthed) (glass stoppered)
- (9) Four thin india-rubber rings (for 1, 2, 3, 4, above) 4 rubber teat caps for (3), (4) above small labels note-book spirit lamp test-tube cleaning brush, 6" forceps
- (10) A box to carry twelve test-tubes (for one hospital)

The accompanying diagram will explain the apparatus as used.

For the last few months I have used this method of vaccine treatment with the most gratifying results.

Operation wounds, ear discharges, nasal discharges (common colds too), furunculosis, boils, urethral discharges, bronchial discharges, septic

wounds, catarrhal ophthalmia, urinary coli infection, and many other conditions have successfully succumbed to this vaccine treatment. I have forgotten to add perhaps the most important of all, viz., obstetric cases.

I append a few illustrative cases.

Case (1)—At 9 p.m. one evening a woman was brought into the Dufferin Hospital, Saharanpur, in labour. Labour pains commenced in an adjoining village four days before. The hand and forearm of a child was hanging out of the vulva. The village midwife had been pulling at it hard for some time (probably at least 24 hours as is the custom with these grossly ignorant and superstitious people) and given it up as a bad job. As a rule such cases are almost moribund when they are brought in. I took several swabs in holders and mopped out all the discharge in the vagina, placed them in a flask with one ounce of saline solution, left it for twelve hours occasionally shaking well, filtered it, and at 9 A.M. (day after admission) injected 4 c.c. of the filtrate. To go back, I had to remove the child by first decapitating, the shoulder being firmly wedged in the brim and the uterus in a state of spasm. At the time of the injection the woman looked very ill, tired, face drawn, and with a rapid pulse. That evening her temp. went up to 104. Next day her condition was much better. A free grumous discharge was coming from the vagina. She rapidly recovered but got a large vesico vaginal slough and fistula, which was to be expected. Later, this was repaired, but the patient left the hospital against orders.

Case (2)—A boy came to hospital with the end of his finger almost cut off $\frac{1}{4}$ " from tip, there being only a budge of skin $\frac{1}{4}$ " wide and $\frac{1}{8}$ " thickness of underlying tissue. He had come into hospital at once. I placed the finger in his mouth at once and had him sucking it practically for two days off and on. About the fourth day I under chloroform had the inside of the cut tip scraped out leaving a hollow cut of skin. Three stitches held it in position over the granulating end of the finger. This successfully covered the stump with skin and thus gave him a finger one inch longer than it would have been under any other treatment, aseptic healing occurred.

Case (3)—A radical cure of inguinal hernia (Europea Ry Guard) on the night of operation managed to carelessly saturate his dressings with urine and again the next day the result was the most violent cellulitis extending all over the hypogastrium and the scrotum on that side. The two lower stitches were removed and autogenous vaccine prepared as above and injected. The cellulitis subsided rapidly. The skin however had been undermined all round, in some places as far as four inches. slight thin discharge went on for four weeks, probably kept up by deep stitch irritation. The final result was that all the operation wound had healed by first intention except the lower one inch which granulated up, that there was no sloughing of skin which under any other treatment would have been bound to happen with cord and testicle and belly wall complications.

Case (4)—A man had a ganglion situated over the wrist joint. This was removed through an incision 1" long. Immediately he came round from the anaesthetic the plain boiled water dressing was removed and the wrist placed frequently in his mouth to suck. The wound healed by first intention.

Case (5)—Depressed fracture of skull in frontal region in a sycy of Remount Depôt, Saharanpur. He had been kicked by a horse. The wound was dirty and contused. The skull was trephined, depressed bone raised, and a piece which had been driven into the brain substance removed. The scalp was lightly drawn together. He was given by the mouth daily autogenous

vaccine from the dressings. The wound healed by granulation without complication.

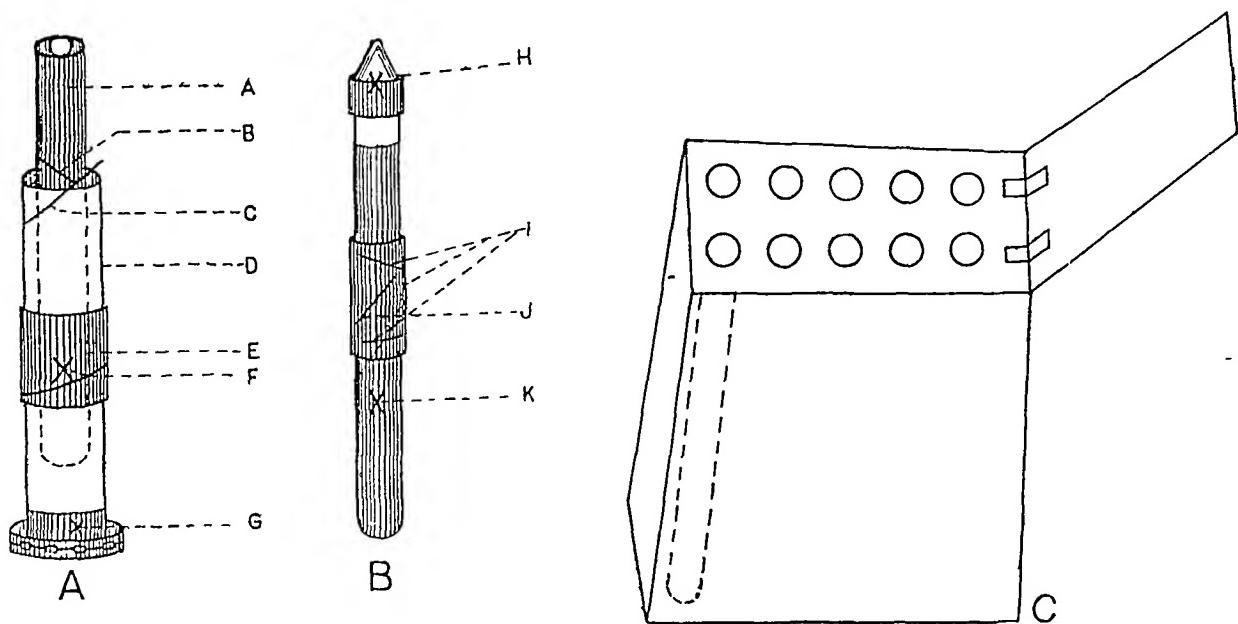
Case (6)—A good one for comparison with above. A boy fell from a tree on to his forehead. He had a depressed fracture. I was absent and the case was operated on "secundum artem" by the assistant surgeon. He was admitted to hospital the day following case (5)'s admission. Profuse suppuration took place and a hernia cerebri resulted. He was not treated with vaccine.

Case (7).—A European developed acute cystitis with a temperature of about 102 daily, with most painful and frequent strangury. The urine was acid, and contained bacilli coli, there was no urethral discharge or history of gonorrhœa. Four days' treatment with cystopurin, etc., caused no amelioration of symptoms. I then centrifugalised his urine, collected the sediment from several such centrifugalised tubes, added saline, shook the tube well, again centrifugalised, decanted the supernatant fluid, took M 6 of the sediment, added one ounce of sterile saline, stood it for 24 hours, occasionally agitating, filtered, and injected M 20 of the filtrate subcutaneously. Considerable reaction both local and general

it is possible to get such information as an illiterate Indian can give (generally totally incorrect) it would appear that the crisis occurred on the third day of the disease.

Cases of bowel trouble offer an interesting field for experimentation in autogenous vaccination. Animal experiments are required. The limitations are (1) how far the normal physiological action of the alimentary organisms would be interfered with and with what results, and (2) what would be the toxic effects of organic substances normally present in the faeces and which could not be eliminated from the vaccine prepared by this method.

A (A) candle filter into which B's contents have been poured, (B) rubber band to hold the glass rod, (C) which keeps the candle 2" from the



followed but the bladder pain and strangury ceased at once as if by magic. He then made an uneventful recovery. One injection only was given. The temperature came down by lysis. It lasted ten days from the commencement of the illness.

Cases of cold abscess, tubercular inflammation of joints with swelling and sinuses, tubercular sinuses of bone, have all greatly improved under vaccine injections prepared from their pus, but Indian patients will not stay in hospital long enough to see whether a final cure would result.

Cases of lung trouble, pneumonia and consumption have been treated but not in sufficient number to warrant conclusions being drawn. One bad case of pneumonia was injected with vaccine prepared from his sputum. His temperature and symptoms came down by crisis but this may of course have been the natural course of the disease. As far as

bottom of the glass vessel (D), (F) is the label taken from B when filtration is started, (G) is the filtrate which is the vaccine for injection.

B is a test-tube containing a twelve-hour-old mixture of pus or discharges with sterile aq dist, (H) is a rubber teat, (J) a label held on by (I) a rubber band.

C is a box to carry test-tubes for collection of material in the ward.

After use all candles to be well shaken up with several changes of water, well scrubbed out with the test-tube brush, filled with distilled water, allowed to filter this through, carrying away material out of the pores during the process, placed in a pan with all other test-tubes, bottles, teats, bands, etc., and boiled for thirty minutes.

Indian Medical Gazette.

NOVEMBER

"COMPULSORY" VACCINATION

vs

"COMPULSORY" SANITATION

UNDER the title "*The Vaccination question in the light of modern experience, an appeal for reconsideration*" Dr C Killick Millard, the well-known medical officer of notorious Leicester, has written a book which should be read by all medical men and especially by all sanitarians. It is not an "antivac" book and it is entirely free from the vile abuse and coarse language usually indulged in by the particular type of crank who attacks vaccination. It discusses the subject of vaccination from an entirely independent standpoint, Dr Millard does not believe in vaccination as a state measure for the benefit of the community, but he absolutely, definitely and without qualification believes in vaccination as a protection for the individual for a number of years. We must briefly but fairly summarise Dr Millard's position towards vaccination—in that while he entirely believes in and trusts to vaccination as a protective (for a long period) of those exposed to infection, he does not believe in infant vaccination as a state measure of protection, but he trusts rather to the *emergency vaccination*, for example, of contacts, nurses, doctors, and all hospital attendants, *i.e.*, he postpones the admitted means of protection till the moment of attack. In this respect he is entirely opposed to the cranks. He does not think infantile vaccination necessary, nor effectual, unless associated with compulsory re-vaccination (as in Germany). He trusts to *modern up-to-date* sanitary arrangements to protect the community, and he thinks the danger of small-pox outbreaks not sufficient to justify expensive and compulsory infantile vaccination, he believes that "small-pox is leaving this country" (England) and is becoming rarer, like typhus fever, etc., and this in spite of constant reminders of its existence. Dr Millard points out that there is clear distinction between the effect of vaccination upon the *individual* and upon the *community*.

He regards the following proposition as axiomatic—"Vaccination has beyond all doubt, so far as the individual is concerned, a protective

influence against small-pox." It is no "myth" as the "antis" term it. He admits and his chart shows that there has been a remarkable and steady reduction in small-pox mortality since the Vaccination Era began about 1800.

His main objection to the vaccination law is in its "compulsion," his is one of those minds who let the idea of "compulsion" obsess them, he has all the fiery radical politician's half understood dislike of "compulsion," as if half the actions of life were not compulsory, and as if the sanitation of the future will not be a dozen times more "compulsory" '*Le mot obsesse*,' as Renan once said. He is on more reasonable grounds when he points out certain dangers of universal infantile vaccination, and the necessity of taking every precaution in doing this minor operation, and he certainly points out how vaccination attempts to defeat itself—in the fact that in vaccinated people the outward symptoms of small-pox may be so slight that they are often overlooked and consequently these mild cases (so satisfactory to the family and individual) may become and do become the centres of outbreaks though he admits that, nevertheless, mild cases do sometimes occur in the unvaccinated and these are equally dangerous. This is a real danger and it behoves medical schools to insist on medical men having a good training in all types of small-pox.*

What then does Dr Millard propose to take the place of infant vaccination? He says *Modern measures of sanitation "in this country"* (England)

Let us see what he means by the expression—

(1) Hospital isolation, for the prompt removal of the sick, (2) notification, (3) surveillance of all contacts, *i.e.*, all individuals who have been in contact with cases and "keeping them under strict supervision," (4) disinfection of houses and clothing, this means in many cases destruction of clothes and compensation, (5) visitation of houses, systematically by Inspectors; (6) interchange of information between different districts.

This is all very well for an advanced state of society as in England, and even there the compulsory enforcement of such measures has in ignorant communities led to serious trouble and the "compulsory" element in such measures

* The same argument applies to typhus fever. Not one in a thousand students has ever seen a case. We remember years ago, in Peshawar, seeing a case and diagnosing it as such, but except the writer no one of many who saw the case had ever seen typhus, but all agreed in suspecting it.—ED

is surely as "objectionable" as "compulsory" vaccination. Can any sensible man imagine the leaving of small-pox control to modern sanitary measures in India? The experiences of 18 years of a much more deadly, if less loathsome disease clearly shows that, while Dr Millard's modern "compulsory sanitary measures" may be tolerated in a city like Leicester (which has a mistaken sort of reputation to keep up) they can neither be introduced nor enforced in any town or city in India, and that as a consequence we must continue in India to carry on the great work of protecting from small-pox by vaccination. Those who know how, even 60 years ago, small-pox was terribly prevalent in India are well aware that no single act of the English in India has done more good universally than the introduction and spread of vaccination. Dr Millard quotes from several ancient sanitary reports in India, but he ignores Major S P James' book on the subject, but even Dr Millard with his modern ideas of up-to-date compulsory sanitation admits that in "such countries as China or India vaccination is an incalculable boon".

Dr Millard's plan of campaign may suit some advanced cities in England, we should greatly dread trusting to them in many cities in the United Kingdom, and certainly they could never be effectual in a majority of cities on the continent of Europe, and in oriental countries his ideas would rapidly be discredited.

Current Topics

CRAWFORD'S HISTORY OF THE I M S

We are glad to see these two handsome volumes at last appear. We have already frequently called attention of I M S officers to this splendid record of their service and we feel sure that all medical officers will possess themselves of a copy. The book is very well printed and the illustrations consist of an excellent reproduction of the portrait of J Z Holwell (from the portrait in possession of the Government of India), a facsimile copy of Wm Hamilton's tomb inscription, and Lady Butler's celebrated picture entitled *The Remnants of an Army*, which commemorates the return to Jalalabad on 18th January 1842 of Asst-Surgeon Wm Baydon "the sole survivor apart from hostages and prisoners of the force which started on its retreat from Kabul a week before" (Crawford, ii, p 206).

The book is published by Messrs Thacker & Co, London, and is on sale by Messrs Thacker, Spink & Co, Calcutta.

TREATMENT OF ENTAMOEIASIS

DR D G WILLIAMS has a valuable if preliminary report (*Phil. J. of Sci.*, Feb 1914, p 93) on the treatment of entamoebiasis by emetin ipecacuanha and neo-salvarsan. It is based on the fact that Walker's investigations have shown that an "experienced microscopist" can differentiate *E histolytica* (the essential etiologic agent of amoebic dysentery) from the harmless *E coli*. We quote Dr Willet's own summary of his work —

I The 132 cases of entamoebiasis considered consist of 27 dysenteric and 105 non dysenteric cases. The dysenteric cases are divided into 11 treated with emetin and 16 with ipecac, the non dysenteric into 44 controls—34 treated with ipecac, 19 with emetin, and 8 with neo salvarsan.

2 A. Prophylaxis against the occurrence of entamoebic dysentery in an infected individual and against carriers of *Entamoeba histolytica* consists in (1) making a differential diagnosis between *E coli* and *E histolytica* and treating only those infected with the latter species or (2) treating all persons indiscriminately who are infected with entamoeba.

B The exclusion of *E histolytica* from an infection is impracticable for routine usage because of (1) the experience required to make a correct differential diagnosis between *E histolytica* and *E coli*, (2) the time required for an experienced microscopist to make such a differential diagnosis, and (3) the frequency of *E histolytica* in this locality.

C Prophylactic treatment should, therefore, be confined to expelling entamoeba from the intestinal tract. In order that such a treatment may be widely used, it must be inexpensive, give good results quickly, and the method of administration must be simple and unattended by prolonged unpleasant reaction.

3 A Four preparations are now in use for entamoebiasis—ipecac, emetin, neo salvarsan, and bismuth. Reports of each and all of these treatments deal chiefly with their application to the symptomatic cure of dysenteric cases, whereas they should be applied also to the cleansing of the bowel of entamoeba.

B Results obtained by Winn in dysenteric, and by ourselves in non dysenteric, entamoebiasis with salvarsan and with neo salvarsan indicate that this treatment may prove to be the most efficacious of the four varieties in quickly relieving the dysenteric symptoms and expelling entamoeba from the intestinal tract.

1 A Entamoeba are very unequally distributed in a given stool and in different stools from an infected individual. This makes it difficult to estimate the intensity of an infection and to tell when a specimen is truly negative.

B More than three consecutive negative examinations are required before one may state with safety that a person is free from entamoeba, provided four cover-glass preparations be examined of each specimen.

5 Rest and diet influence the clinical evidences of entamoebic dysentery favorably, and our results in control cases tend to show that they are to be reckoned with in the elimination of entamoeba from the intestinal tract.

6 Because of the recurrent nature of entamoebic dysentery, it is to be remembered that some apparently good clinical results will be obtained with any form of treatment.

7 A In our dysenteric cases emetin gave a larger percentage of symptomatic cures and acted quicker in this class of cases than ipecac.

B Emetin and ipecac were about equally efficacious in expelling entamoeba from the intestinal tract. The time required to expel the entamoeba with the two preparations was also about equal.

8 In our non dysenteric cases neo salvarsan freed the bowel of entamoeba in 100 per cent of cases, ipecac in 70.6 per cent and emetin in 36.8 per cent. From the

last two percentages an undetermined factor which is less than 25 per cent must be subtracted, because this percentage of error would have given two consecutive final negative examinations (an arbitrary standard adopted for comparative purposes) in the time limits without treatment

REPORT OF COONOO R PASTEUR INSTITUTE.

MAJOR CORNWALL'S report on the working of the Coonoor Institute is one of unusual interest. It refers to the year ending 28th February 1914.

Since the Institute was opened there have been 5,480 patients treated, the virus was in its 443rd passage on 28th February 1914.

"Of the 5,480 persons treated—

- (Class 1) 8 died of hydrophobia during the course of treatment
- (Class 2) 18 developed hydrophobia within 15 days of the end of the treatment
- (Class 3) 42 developed hydrophobia more than 15 days after the end of the treatment

TOTAL 68

The persons included in Class I all came under the observation of the medical officers of this Institute, and the cause of death is therefore assured in each case.

The persons included in Classes 2 and 3 had returned to their homes and the diagnosis of hydrophobia rests in most cases on descriptions of their symptoms given by unskilled relatives. There is probably a tendency on the part of relatives to attribute every death which occurs within a few weeks or months of the course of treatment to hydrophobia. Nevertheless that source of error cannot be allowed for, so every death which might have been due to hydrophobia is taken to have been actually hydrophobia, and none have been excluded as being doubtful.

Doubtless a certain number of errors occur on the other side, for it is probable that every death from hydrophobia amongst the treated is not reported to the Institute. I am of opinion, however, that not many such deaths escape notice.

Class 1 cannot be accounted failures as the course of treatment had not been accomplished. They are therefore omitted from statistics.

Class 2 are not accounted failures in the statistics of any Pasteur Institute, since it is held that a state of immunity is not reached till 15 days have elapsed after the course of treatment has been concluded.

Class 3 are accounted failures by all institutes.

Inspection of the figures in the table (given in the report) suggests that there are periods of greater susceptibility to hydrophobia in childhood and again in later life, and that young adults are the least likely to develop it.

Taking the 68 persons who died during and after treatment it is found that the average number of days that elapsed between the bite and the outbreak of hydrophobia was 50, with a maximum of 203 days and a minimum of 20 days.

Excluding the eight who died during treatment the average incubation period was 50 days, with a maximum of 203 and a minimum of 24 days.

Excluding further the 18 who died within 15 days of the end of the course of treatment, the average incubation period becomes 62 days, with a maximum of 203 and a minimum of 34 days."

The following portion of the report is of such interest that it is here reproduced in extenso —

THE MORTALITY DUE TO RABIES

In G.O. No. 716, Public, dated July 31st, 1911, Government recorded their approval of my scheme to collect information regarding the proportion of persons who develop hydrophobia after being bitten by rabid

animals, the proportion of those bitten who come to Coonoor for treatment, and various subsidiary points. All officers of the Medical Department were requested to afford the necessary assistance and the Districts of Travancore and Cochin agreed to co-operate.

Sufficient time has now elapsed since the order came into force for an enquiry into its working to be of value.

The method followed has been to obtain from every patient coming to the Institute the names of all others whom he knows to have been bitten by the same animal.

A detailed enquiry form for each person is then sent to the local medical officer with the request that he will fill it in under the various headings and observe all the persons bitten by that animal, whether treated or untreated, at intervals of a month for one year. It was hoped that by this means sufficient exact data might be obtained to enable a definite pronouncement to be made on numerous points which at the present time are dubious, such as —

- (1) the percentage of persons bitten by a rabid animal who develop hydrophobia,
- (2) the percentage reduction in mortality due to the treatment afforded by the Institute,
- (3) the influence of indigenous methods of treatment,
- (4) the effect of caustics and medicaments applied to the wounds,

(5) the effect of severe as opposed to trivial bites.

It was also desired to test the accuracy of the ordinary statistics of the Institute as regards the number of failures which may remain unreported and the number of deaths which are attributed to hydrophobia, because they occur after the treatment, but are really due to other causes. It was recognised that there were numerous difficulties in the way of recording the required data, such as moves on the part of the persons to be observed from place to place, transfers of the observing officers, distance of villages from the observing centres and last, but not least, entire lack of interest on the part of the observing officer.

These difficulties have led to a considerable number of omissions in filling in the items on the forms and even to entire failure.

The time fixed for observation, namely, one year, proved to be too long, so latterly it has been reduced to six months in the hope of securing data more readily, although a small number of deaths will undoubtedly be missed as a result of the reduction.

Sufficient material has not yet been accumulated to render a minute analysis profitable, but the following figures will give an idea as to how the enquiry is proceeding —

444 persons who had been bitten by animals considered by this Institute to have been suffering from rabies have been under observation. In the majority of cases the period was one year, in the rest shorter periods.

In some instances rabies of the biting animal was proved in this laboratory, in the remainder the animal was judged to have been truly rabid after careful enquiry into the history of the affair. There is little room for doubt that the biting animals were actually rabid.

Of the 444 bitten persons 169 were treated at this Institute, 275 did not come for treatment. A provisional conclusion may be drawn that only about 35 per cent of those bitten by rabid animals are willing to come to this Institute for treatment. This conclusion does not take into consideration the probably numerous persons who have never heard of this Institute. The 275 who are now under discussion all knew of the Institute, but for various reasons declined to go to Coonoor.

It may be reasonably assumed, therefore, that not more than 20 per cent of persons bitten by rabid animals come to this Institute for treatment and that, whereas about 1,200 persons are now treated annually, this number possibly may be increased in the future to 6,000.

Amongst the 169 persons treated 5 deaths occurred from hydrophobia. The descriptions which I have received of the symptoms leave no room for doubt that the deaths were truly due to hydrophobia. This gives

a rate of nearly 3 per cent amongst the treated. Amongst the 275 untreated persons there were 20 deaths reported to have been due to hydrophobia and 5 due to other causes. This gives a rate of about 7.2 per cent amongst the untreated for hydrophobia and 1.7 per cent for other causes.

The figures dealt with are far too small for any definite conclusions to be drawn from them, but they suggest that, as was suspected when the enquiry was undertaken, the ordinary statistics of this Institute are misleadingly inaccurate, and I would go so far as to assert that a similar condemnation is applicable to the published statistics of many other institutes.

The working of the scheme under G.O. No. 716, Public, dated July 3rd, 1911, has not proved an unqualified success, and I am inclined to suggest that the enquiry should be carried on in another way.

* * * * *

The influence of treatment can scarcely be arrived at by taking figures in bulk. Numerous instances are set down in our records of 10 or more persons having been bitten by the same animal without any fatality, even when there was no question but that the animal was rabid at the time.

It is not practicable to declare that all those persons were either naturally immune or were artificially immunised or that the animal's saliva for some unknown reason was not infective. The fact remains that it frequently happens that a rabid animal bites numerous people and that none will die whether treated or untreated.

On the other hand, there is a considerable number of instances in which a rabid animal bites several persons, the majority of whom develop hydrophobia. It is only when one can accumulate a sufficiency of the latter instances that the influence of treatment can be judged.

The following table will give an explanation of the point —

TABLE XIX

Biting animal	Number of persons bitten	TREATED AT COONOR		UNTREATED AT COONOR	
		Survived	Died	Survived	Died
A	Dog	10	4	0	6
	Jackal	5	3	0	0
	Dog	8	2	0	6
	Dog	11	2	0	9
	Dog	7	6	0	1
B	Dog	3	1	0	0
	Dog	3	2	0	1
	Jackal	26	14	12	12
	Jackal	3	2	1	1
	Jackal	9	7	2	2

In part A of the table, of 41 persons bitten, 17 were treated and survived, 24 were not treated and survived.

In part B, of 44 persons bitten, 3 were treated and survived, 41 were untreated and of these 18 died.

THE MAYO HOSPITAL REPORT, CALCUTTA

THE report on the Mayo Native Hospital, Calcutta, for 1913, submitted by Lieutenant-Colonel F. P. Maynard, F.R.C.S., I.M.S., has as an introduction a brief historical note on the origin of the hospital.

It was so long ago as 1792 that Mr. Robert Wilson, then Member of the Medical Board, established the hospital "for the treatment of the native poor suffering from sickness" and a large sum of money was raised in subscriptions. In

1803 the hospital started vaccination and various Governors-General have taken a great interest in the institution. The hospital was enlarged in 1839 and opened dispensaries connected with it.

The present Mayo Native Hospital owes its origin and completion to the "energy and persevering solicitude" of Surgeon-Major N. C. Macnamara, I.M.S., then Surgeon Superintendent. It owes its present name to the conditions upon which a grant of Rs. 50,000 was received from the Mayo Memorial Fund, raised in commemoration of the viceroyalty of Lord Mayo. The foundation stone was laid by His Excellency the Viceroy and Governor General of India, Lord Northbrook, on the 3rd February 1873, and it was opened for the treatment of patients in September 1874. At the same time the Gurianhatti Dispensary was closed, and the inpatients of the Chandney Hospital reduced to twelve.

The Sukea's Street Dispensary was transferred by Government to the management of the Governors of this Hospital in February 1874.

In 1907 a gift of Rs. 10,000 was received from Srimati Raj Rani Dassi towards the building the Chandney Hospital Out door Dispensary, and Surgeon Superintendent issued an appeal to the public in the newspapers which was well responded to. Mrs. D. King assisted and collected Rs. 15,260 from the chief European firms in Calcutta. The old out door dispensary and site were sold for Rs. 40,101 and a piece of land adjoining the out door dispensary was acquired from the Corporation at a cost of Rs. 17,042, the Corporation very kindly giving another piece of land of almost the same size to make up the required site in Temple Street. The Government of Bengal gave a grant of Rs. 16,000 towards the building. Messrs. Martin & Co. constructed the hospital which was opened by Sir Edward Norman Baker, K.C.S.I., Lieutenant Governor of Bengal, on July 26th, 1909, in the presence of the Governors and a large number of representative citizens.

The Chandney In door Hospital of 12 beds was closed from 1st April 1913.

In the 5 years ending with 1913 no less than an average of 132,713 patients were treated on an average 835 daily.

We quote the following from Lt.-Col. Maynard's report to show the great amount of good medical and surgical work done in this hospital.

The following table shows (a) the admissions and deaths of some of the important medical cases treated at the Mayo Hospital, and (b) some of the more important surgical operations performed there during the year —

(a) Diseases

No.		1913		1912		Average of last five years	
		Number of Admiss.	Deaths %	Number of Admiss.	Deaths %	Number of Admiss.	Deaths %
1	Plague	1	100.00	2	100.00	3	100.00
2	Cholera (a)	99	47.47	101	35.06	107	45.60
3	Malaria (b)	94	2.12	70	1.42	129	11.05
4	Dysentery (b)	32	15.62	47	14.89	46	21.10
5	Cerebro Spinal Fever	1	100.00	1	33.33	2	59.99
6	Typhoid (b)	18	27.77	6	46.15	8	44.06
7	Pneumonia	48	37.50	61	26.22	49	33.62

(a) The percentage of recoveries with different methods of treatment was as follows — With intravenous injection, 40.38 per cent, with rectal saline 59.45 per cent and with no

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INTESTINAL PARASITES AT COIMBATORE

saline injection, rectal or intravenous, 60 per cent. It should be, however, remembered that the worst type of cases required saline intravenously and the mild ones none at all.

(b) Mortality from Malaria, Dysentery and Enteric has been markedly less

(b) Surgical Operations

Among the more important Surgical operations performed during the year were —

(1) 53 cases of excision of tumours, of which 36 were for elephantiasis 33 scrotal, and 2 labial,

(2) a case of ligation of the common carotid for aneurism,

(3) A case of neuromraphy of the brachial plexus, curing paralysis of the upper limb,

(4) 4 extirpations of lacrimal sac, and 8 of eyeball (1 Mule's),

(5) 284 cases of extraction of lens for cataract,

(6) 3 radical operations on mastoid,

(7) 3 laparotomies, of which 1 was for recurrent appendicitis, 1 for pyosalpinx, and 1 for purulent peritonitis,

(8) 36 radical operations for cure of hernia, of which 11 were strangulated,

(9) 1 Whitehead's operation for internal piles,

(10) 16 cases of liver abscess,

(11) 5 for stone in the bladder, 3 by cutting, and 2 by crushing,

(12) 2 cases of removal of prostate by Freyer's method,

(13) 195 cases of radical cure of hydrocele

A useful appendix gives many interesting details of surgical operation done, but in such a way as to render them difficult of extraction here, we quote, however, the following —

Removal of Prostate —

"Rampasad, H, M, 50, admitted on 3-5-13 for retention of urine from which he was suffering for 6 days before admission, and was being relieved daily by a private practitioner. On admission the bladder was distended up to the umbilicus, rubber catheter could not be passed in, and the bladder was relieved by No 10 metal catheter. On rectal examination the prostate was found fairly enlarged and hard. Treated for 10 days with alkalies, urinary antiseptics, and washing of the bladder twice daily. Suprapubic cystotomy was performed on 13-5-13 and the middle lobe of the prostate removed. The wound was left open with drainage tubes in. The patient made uninterrupted recovery and was discharged cured on 25-6-13."

Rambrahma Nandy, H, M, 50, admitted on 17-11-13 for retention of urine from which he was suffering for 6 days before admission and was being relieved daily. A fairly big and moderately hard prostate was felt per rectum. Suprapubic cystotomy was performed on 19-11-13 and the prostate weighing 3 ounces enucleated. The patient made satisfactorily progress for the first 10 days after which he began to get rise of temperature which was not influenced by oral or subcutaneous administration of quinine, although the wound was fairly healthy and granulating. He went on losing weight steadily and the pulse went from bad to worse in spite of stimulants. He was discharged on 26-12-13 at his own request'

This was done in 37 cases of cholera and 3 cases of collapse after operation. 17 of the deaths were in cases of cholera and 2 in collapse after operation. The following chart will show the result of the different modes of treatment in cases of cholera.

TREATMENT		Number treated	Cured	Discharged otherwise	Died	Cured %	Died %
Special	Ordinary						
Intravenous Saline (Hyper tonic) with Rec tal Saline	Pot Pe mang pills, Stimulants and Stroph anthus	52	21	1	30	40.38	57.69
Rectal Saline only	Do	37	22	1	11	59.45	37.83
No Saline, Rectal or Intravenous	Do	10	6	1	3	60	30
TOTAL		99	49	3	47	49.49	17.47

It should be noted, however, that Intravenous Saline was administered in the very worst of cases only

ACCLIMATIZATION OF EUROPEANS IN THE TROPICS

The possibility of a Northern European race acclimatizing itself in the tropics is one of vast importance and especially to the inhabitants of Australia, as so much of the Northern portion of that island continent is within the tropics.

Theories are many and facts are few, therefore it is worth here giving some details of genuine example of an unintended experiment in this direct as narrated by Mr J Macmillan Brown in his recent book "The Dutch East" (Kegan Paul & Co, 1914)

The story is briefly as follows.—In 1665 eight Dutch soldiers were sent by the Netherlands East India Company to the little island of Kissa, 16 miles off the most easterly point of Timor, a fort was built and they were told to watch the Portuguese. The Company forgot all about this lonely outpost, and Sergeant Kaftyn and his men realised that they were in fact marooned. They had their wives with them, a guiding principle of the Dutch East India Company. They set to work to build houses and cultivate the land. The descendants of these eight couples still remain. They have been wonderfully fertile, in the two and a half centuries the 16 have risen to 300, and they are a sturdy race with no signs of any evil effects from interbreeding. They still keep their blood pure and still have big families and many have fair European faces and complexions and many children have light hair and blue eyes. These people had to work, and work hard and the consequence is that after 250 years in this tropical island they are still fertile, indeed prolific and still keep their Northern European characteristics.

BOWEL COMPLAINTS AND INTESTINAL PARASITES IN THE CENTRAL JAIL, COIMBATORE.

The following note by Major J P. Cameron, I.M.S., is worthy of publication to show the

prevalence and importance of intestinal parasites in connection with bowel-complaints —

I have been carrying out an investigation into the prevalence of infection of intestinal parasites among the prisoners of the Coimbatore Central Jail, and note the results obtained up to date for the information of those interested.

Total number examined	1,254
Total number infected	1,083 = 86.36%
Ankylostomum Duodenale (Necator Americanus) ..	199 = 15.86
Ascaris Lumbricoides	80 = 6.37
Trichocephalus Trichiasis	61 = 4.86
Tenia (T. Saginata and T. Soleum)	11 = 87
Oxyuris Vermicularis	41 = 3.26
Strongyloides Intestinalis	19 = 1.51
Balantidium Coli	2 = 0.15%
Entamoebae (active and encysted)	670 = 83.43

These figures merely represent the result of microscopic examination of individual stools after the administration of a purgative, no doubt the actual infection is much higher—especially with regard to ankylostomes—as it has been proved that limited microscopic examination merely brings to light a certain proportion of infected cases.

I am, however, of opinion that if infection by entozoal parasites is at all extensive, even a limited examination of the dejecta by the microscope is sufficient to bring their presence to light, provided a little care and skill are expended in the preparation and examination of specimens.

In addition to the parasites mentioned, the large majority of stools examined were found to contain active flagellates (*Cercomonas hominis*), while bacteria were present in a great many.

The small percentage of infection by *Oxyuris vermicularis* is of course due to the fact that these worms rarely pass eggs before leaving the intestine.

The importance of carrying out a systematic examination of the dejecta of all prisoners admitted to jail cannot be over-estimated. By doing so those found to be harbouring parasites can be suitably treated at the outset, and infected stools destroyed by incineration, instead of being sent to the trenching ground.

Conditions such as ankylostomiasis and amoebiasis should be diagnosed and treated without undue delay, and it is only by microscopic examination of the dejecta that a definite diagnosis can be arrived at.

It is true that all cases of ankylostome infection cannot be regarded as suffering from ankylostomiasis, but it is astonishing how even a mild infection produces gastro-intestinal irritation leading to flatulent dyspepsia, loss of weight and general malaise.

These symptoms disappear after the expulsion of the worms, and the general health of the patient usually improves markedly. I have seen many cases of advanced ankylostome infection mistaken for dysentery—as, very often, the passage of mucus and blood accompanied by tenesmus is a feature in this condition. Only recently a prisoner was transferred to this jail for "climatic reasons" who was said to be suffering from dysentery and making no progress whatever under treatment. The man on his arrival presented the typical signs and symptoms of advanced ankylostomiasis, and his stools were literally made up of ankylostome ova—but he had been treated for months, unsuccessfully, for amoebic dysentery!

Similarly I have come across many cases being treated for "anaemia" and "debility"—iron and arsenic being pouled into them without avail—when a course of thymol, or ipecacuanha, was the therapeutic measure really called for.

Amoebiasis is a very common condition in Indian jails, and is responsible for a large number of admissions to hospital for bowel complaints such as diarrhoea, colic, colitis, etc. When active and encysted amoebae are found present to any marked extent in the stools it

is always advisable to prescribe a course of ipecacuanha or emetin, and there is no doubt that the treatment has a very beneficial effect—the tongue clean, the complexion becomes clearer, abdominal discomfort disappears, body weight improves and a general feeling of well-being is established.

The routine followed for the prophylactic treatment of all new admissions is that recommended by Forster, viz.—

Day of admission	Mag Sulph oz 1
2nd day "	Liq Hydriarg Perchlor. di 1, t 1 d
3rd day "	Do
4th day "	Do
5th day "	Mag Sulph oz 1

Prisoners found infected with entozoa are put under treatment immediately—all advanced cases of ankylostome infection being admitted to hospital after the quarantine period has passed—and the results of examination and treatment are noted in the prisoners' history tickets for future guidance.

I may say in conclusion that bowel complaints are now conspicuous by their absence, and the health of the prisoners throughout the year has been excellent.

Reviews.

"Insanity" (3rd Edition)—By E G YOUNGER
Published by Messrs Baillière, Tindall & Cox

This monograph, as stated in the preface to the first edition, is simply "an outline chart and in no sense a detailed reference map." As an "outline chart," a handbook to guide the student through the elementary stages of his studies in this branch of the science of medicine, it is likely to prove useful, but it is palpably not intended for use as a reference book by the general practitioner.

Brevity, simplicity, and conciseness are marked features of this publication, but seem to have been carried to such an extent that the utility of the work is very circumscribed.

Under etiological factors the only two to which any attention is given are heredity and alcohol. In the light of recent researches surely other factors are of equal, if not greater, importance, and a knowledge of them equally essential those entering upon a study of this subject. Psychic causes, mental and physical exhaustion, toxæmias, etc., etc., are not even considered worthy of mention, though their importance as aetiological factors is now universally recognised.

The section on the early and premonitory symptoms of insanity is undoubtedly a useful one. Here, however, much has been sacrificed for brevity and simplicity, and the wholesale recommendation of certain sedatives without any qualifications as to their applicability is not a proceeding to be commended, e.g., sulphonal, which is certainly a drug to be avoided in cases of melancholia owing to its effects on mitogenous metabolism.

The section on the examination of the patient is one of the best in the book. It contains much commonsense advice and information which should prove of use to the tyro in this subject.

The various forms of insanity are classified primarily according to the mental manifestations alone and after a description of six main groups, viz., mania, melancholia, delusional insanity, general paralysis of the insane, dementia, idiocy, various "special forms" are described, these being based mainly on aetiological factors.

The descriptions of the various forms dealt with are clear and well written. Here again, however, much has been sacrificed to brevity and one cannot help noticing in the description of general paralysis (which is especially noted in the preface as having been rewritten and brought up to date) that no mention is made of the changes met with in the cerebro-spinal fluid of such cases and the advisability, at least in all early cases, of carrying out a lumbar puncture and subsequent examination of the cerebro-spinal fluid to clinch the diagnosis.

The book, as already stated, is likely to prove useful as an elementary handbook for students, but it is not calculated, nor apparently intended, to satisfy the wants of the general practitioner.

Genito-Urinary Diseases and Syphilis.—By EDGAR G. BALLENGER, M.D. Second Edition. Pages 529 Illustrations 109 Butterworth & Co., Calcutta Price Rs 12 net

The author's idea in the first edition of this work was to present to the student something between the large manual and "quiz compends" and to devote more space to the commoner affections. This second edition has been largely rewritten and a quantity of more recent work has been added.

On the whole the book may be said to have fairly satisfactorily attained the author's end. It is of course difficult to see exactly eye to eye with him as to the amount of detail to be given in any one particular subject, and that may partly be responsible for the impression that the book is distinctly uneven.

There is no doubt that it is well up to date, but possibly a little more detail in some of the recent work would have been an advantage to the student.

The chapters on gonorrhœa and syphilis with the section on Salvarsan and the Wasserman reaction are perhaps the best. That on the prostate appeared sound but unfortunately a large section on this subject in the volume sent for review had been left out in the binding.

There are also minor inaccuracies in spelling, etc., the illustrations on the whole are poor, some distinctly bad, and the book might have been better got up.

Researches into Induced Cell-Reproduction in Amœbæ.—(Published by JOHN MURRAY, London Price 5/- net)

This is volume IV of the McFadden Researches and record the investigations of J. W. Cioppini

and A. H. Diew. In the preface it is stated that, "They (the researches) include a working hypothesis that normal cell-reproduction and benign tumours are caused by certain chemical agents, called auxetics, such as tyrosin, creatin, etc., and that cancerous tumours are caused by a mixture of auxetics with another group of substances, called kinetics or augmentors, such as choline and cadaverine." The book is divided into four chapters. In the first the influence of environment and the action of auxetics and kinetics on amoebæ is considered. The second chapter deals with the encystment and excystation of amoeba. In the third part the preparation of "pure mixed cultures" of amoeba is gone into. The final chapter deals with a parasite of amoeba. The work is illustrated by 33 figures and plates.

Modern Surgery.—By JOHN CHALMERS DA COSTA M.D., LL.D. Seventh Edition 1,085 Illustrations Pages 1,515.

This is the seventh edition of Da Costa's surgery and worthily maintains the high reputation which this book has always possessed. It is distinguished from the ordinary run of text-books by the much fuller discussion of controversial topics than is usual, and by the copious quotation of authorities with reference to original papers, conclusions being often given in the author's own words.

The arrangement of the subject matter is on the usual lines. After a short epitome of surgical bacteriology, with which is incorporated a useful account of the properties of all the commonly used antiseptics, we pass to the subjects of inflammation, repair, suppuration, gangrene and the general surgical diseases. Insufficient space is allotted to the spirochaeta pallida and the erroneous statement appears that the organism is not found in gummatæ, though this statement is subsequently corrected in the section on syphilis. The general principles of treatment of inflammation are described with unusual thoroughness, but we note that acupuncture, which is surely a well-tried and valuable method in certain cases, is omitted. Rickets is allotted insufficient space for such an important disease. The article on surgical tuberculosis is exceptionally good, but in dealing with tuberculous abscesses a departure from custom is made, in that various abscesses such as retropharyngeal, dorsal, lumbar and psoas abscess are dealt with in this section. On turning up the article on spinal caes we find that for the subject of abscess formation the reader is referred to the article on tuberculosis, similarly tuberculous abscess of lymphatic glands and of many other regions is dealt with in this section and omitted from that dealing with diseases of the region concerned. On the other hand, tuberculosis of joints, peritoneum, meninges and testicles is briefly referred to here and dealt with more fully in the appropriate sections. We are unable to see any advantage in this arrangement,

which involves either troublesome cross-reference or unnecessary repetition. The article on syphilis is open to the same criticism.

The article on shock is well up-to-date especially in regard to treatment. Caille's anoxi-associa-tion technique is described, but we are surprised to see no reference to Henderson's acapnia theory. The section on tumours is brief and there are no figures to illustrate the histology of morbid growths. There is an excellent and clearly illustrated account of the most modern methods of suturing in the treatment of aneurysms and wounds of arteries. Fractures and dislocations are dealt with on the usual lines, modern operative methods where applicable being discussed and described, but many of the reproductions of radiographs are unsatisfactory, Fig. 337 in particular is quite useless. The sections on the surgery of muscles, tendons and nerves call for no comment, but we consider that orthopaedic surgery requires more than eleven pages for its adequate treatment.

From this point onwards the book reaches and maintains its highest level. The articles on injuries and diseases of the head, on tracheo-bronchoscopy, on thoracic surgery and on the surgery of the alimentary canal, of the gall-bladder and bile-ducts and of the genito-urinary system are complete and up-to-date summaries of the subjects with which they deal, numerous alternative operative procedures are described, in almost every case the references to the original papers are given, and the author indicates his own preference with his reasons therefor.

We would select for especial commendation the sections on operations on the skull and brain, the hints for identification of the small and large intestine and their various portions (some of the points given are original and should be of the greatest value to those who are only occasionally called on to perform abdominal section in acute cases), the discussion on early operation in acute appendicitis, the exhaustive treatment of the advantages and disadvantages of the various methods of performing gastro-enterostomy, around which so much discussion has centred of recent years, and the equally exhaustive discussion of methods of intestinal anastomosis, leading in each case to recommendations based on the author's own experience, and finally the excellent account of the technique of cystoscopy. The book closes with a brief but very practical account of the uses of the Roentgen rays, Finsen light and radium. As regards diseases of special interest to surgeons practising in the tropics, the book is disappointing. Liver abscess is inadequately treated, open incision is advised in all cases, treatment by aspiration is barely mentioned and the use of emetine is not referred to at all. Delhi boil is dismissed in six lines and elephantiasis in five!

There is an excellent and copious index, and we have detected only a few unimportant

typographical errors. The illustrations are for the most part reproductions of photographs of actual cases, and where figures are borrowed the source is in all cases acknowledged. The type is rather small and close set which makes the book somewhat fatiguing to read.

We have no hesitation in saying that for its size this is the best text-book of surgery we have seen. It is not a suitable book for students, the treatment of the subject being too advanced and the pathological aspect being throughout subordinated to the clinical, and for the student all teaching must be closely and constantly correlated with pathology if his surgical knowledge is to be built on a sure foundation. But for those reading for the higher examinations, and for the practitioners who are frequently confronted with difficult surgical problems, this book can be cordially recommended as being a thoroughly trustworthy exposition within a moderate compass of modern surgery.

ANNUAL REPORTS

PUNJAB HOSPITALS

The Triennial Report is concerned with three years 1911—1913 and is submitted by Colonel C J Bamber, MVO, I.M.S.

The Government Resolution points out that the increase in the number of dispensaries is not as great as it might be, and they view with some suspicion the figures of attendance at the Gujaspur dispensaries, and ask for an explanation of these "peculiar circumstances".

We shall now make some extracts from Colonel Bamber's Report —

The following note on public subscriptions is worth republishing —

"In the matter of subscriptions I agree with Mr Bosworth Smith, Deputy Commissioner, Ferozepore, that much might be done by civil surgeons who have the confidence of the people to keep and direct charitable impulses of this country into the channels of medical relief by forming local committees to collect subscriptions. The charitable impulses are there, but they need direction."

The system of charging for medicines from patients who are rich enough to pay for them has been continued, though it cannot be said to have become popular. In some districts where the people are generally poor this system cannot be successful. In all the dispensaries in the Ferozepore District this system has been vigorously pushed, and the result has been a success. In the beginning the attendance declined but with time the people came to recognise the payment system and the dispensaries are as well attended as ever. If this system has worked so well in the Ferozepore District there is no reason why it should not give similar results in other districts especially Jullundur, Amritsar, Gujranwala, Lahore and Lyallpur. It is hoped that the district officers will devote greater attention towards the payment system being properly enforced. Mr Bosworth Smith, the Deputy Commissioner, and Major Lee Abbott, the Civil Surgeon, are to be congratulated on the persistence with which they pushed the system in Ferozepore and on the excellent results obtained."

Nov, 1914]

THE PUNJAB HOSPITALS.

SURGICAL OPERATIONS

There were 250,261 surgical operations of all kinds performed during 1913 as compared with 251,865 in 1912 and 233,637 in 1911. The nominal falling off in 1913 against 1912 is due to the operations performed at the various dispensaries located in the Delhi Province not having been shown in the returns. In eighteen districts the number of operations performed during the year under review is higher than that in 1912 while the remaining ten districts show a falling off. There was an increase of 1,318 in Kapurthala, 1,133 in Gurdaspur, 1,032 in Hissar, 927 in Ferozepore, 875 in Amritsar, 798 in Lahore, 585 in Gujranwala and 439 in Shahpur. Of the districts which show a decrease, Sialkot is responsible for 1,317, Ludhiana for 1,061, Mianwali for 646, Gujrat for 439, Jullundur for 438 and Muzaffargarh for 359. Of the 243,899 patients operated on during the year 453 died, giving a death rate of 18 per cent against 22 in 1912. The death-rate for 1911 was also 18 per cent. Selected operations which numbered 25,817 in 1911, rose to 33,430 in 1912 and 36,590 in 1913, giving an average of 31,946. It is pleasing to note that the number of selected operations performed every year continues to increase, the number performed in 1913 being the highest on record. This shows that the medical institutions are becoming more popular every day for their surgical work. The districts in which the largest number of selected operations was performed are — Ferozepore, 5,791, Amritsar, 3,463, Jullundur, 2,533, Gurgaon, 2,447, and Hissar, 2,072. Among the individual hospitals Moga heads the list with 4,673, followed by the Civil Hospital, Amritsar, with 3,098, the Victoria Memorial Hospital, Jullundur, with 1,685, and the Civil Hospital, Gurgaon, with 1,570. The number of important operations performed during the last three years and the preceding triennium is shown below —

Name of operation	1911	1912	1913	Total 1911— 1913	Total 1903— 1910
1 Amputations	576	566	615	1,757	1,545
2 Operations on skull	44	49	32	125	72
3 Cataract ex traction	11,564	14,874	15,459	41,897	29,332
4 Hemiotomy	262	376	363	1,001	636
5 Abscess of liver	110	84	79	273	256
6 Lithotomy	162	167	209	538	556
7 Lithotripsy	12	29	20	61	41
8 Litholapaxy	1,841	2,049	2,044	5,934	5,761
9 Ovariectomy	50	64	49	163	81
10 Operations on vermiform appendix	29	59	35	123	90
11 Removal of prostate	46	67	84	197	60
Total	14,696	18,384	19,989	52,069	38,430

It will be seen that the largest number of operations was performed for cataract, there being 15,459 in 1913, 14,874 in 1912 and 11,564 in 1911. Of the 12,951 patients operated in 1913, 12,173 obtained good vision, the percentage being 93.99 as compared with 93.65 in 1912 and 93.33 in 1911. Sub Assistant Surgeon Mathura Das of Moga maintained his reputation by performing the largest number of cataract operations, viz., 3,411. He has made a name for himself and patients come to Moga from all parts of the Province. In this connection it should also be noted that in recognition of his splendid surgical work the local Government, with the approval of the Government of India, sanctioned as a special case his promotion to the first grade of sub assistant surgeons without examination and without serving for five years in the second grade Lieutenant Colonel H. Smith, M.S., Civil Surgeon, Amritsar, who is a surgeon of world wide reputation comes next with 1,471. Among

other operators for cataract Senior Assistant Surgeon Khan Sahib Diwan Ali performed 1,153 operations, Senior Assistant Surgeon Sri Ram 652, Sub Assistant Surgeon Allah Bakhsh of Tohana 637, and Sub Assistant Surgeon Nand Lal of Bhalwal 612. Sub Assistant Surgeon Bal Mokhand, who was posted to the charge of the Shahabad dispensary in July 1913 and performed 318 operations, promises well.

There were 2,273 operations for removal of stones in the bladder in 1913 against 2,245 in 1912 and 2,015 in 1911. The Multan Civil Hospital as usual heads the list with 209. Lithotomy was done in 209 cases in 1913 as compared with 107 in 1912 and 162 in 1911. The mortality was 10.52, 13.17 and 11.72, respectively, during 1913, 1912 and 1911, giving an average of 11.8 for the triennium. It is satisfactory to note that though lithotomy was performed more frequently in the last year the death rate shows a decline. Litholapaxy is commonly resorted to in the Punjab, it was done in 2,044 cases in 1913 against 2,049 in 1912 and 1,841 in 1911, giving an average of 1,978 for the last triennial period. The mortality was 2.39 in 1913, 2.68 in 1912 and 2.82 in 1911, or an average of 2.63 as compared with 2.97 in the triennium ending 1910. Senior Assistant Surgeon Ram Narayan as usual performed the largest number and deserves commendation.

The officers who did the largest number of important operations in the last year are Lieutenant Colonel H. Smith 2,689, Major J. J. G. Swan 415, Major S. H. Lee Abbott 324, Major M. Corry 300 and Major H. Ainsworth 295.

Among the assistant surgeons the following did the largest number —

K. S. Diwan Ali	1,366
Lala Siu Ram	1,007
M. Mohammad Din	812
Lala Buj Nath	671
M. Nazir Hussain	610
M. Mohammad Ismail	545
and B. Dalip Singh	441

The excellent work done by Sub-Assistant Surgeon Mathura Das who performed 4,510 important operations has already been referred to and it is hardly necessary to say that he holds a unique position among eye surgeons. Next comes Pandit Nand Lal with 988. This Sub Assistant Surgeon is making a name for himself at Bhalwal in the Shahpur District. Great credit is due to him for having developed a small place like Bhalwal into a big surgical centre. Other Sub Assistant Surgeons whose work deserves to be specially noticed are M. Allah Bakhsh of Tohana with 685, Pandit Bal Mokhand of Shahabad with 540 in six months and Lala Gangaram of Muktsar with 371.

A large amount of surgical work is done at the various Mission Hospitals in the Punjab and the Missions concerned deserve credit for the disinterested work done by them to alleviate human suffering. The name of Dr. Newton, F.R.C.S., who did 466 selected operations at the Mission Hospital, Jalalpur Jattan, deserves to be specially mentioned. At the various female Mission Hospitals mentioned in Statement B 7,760 operations of all kinds were performed in 1913. Two hundred and seventy-seven selected operations were performed at the Victoria Memorial Hospital, Ludhiana, of which there were many abdominal operations, 210 at the Mission Hospital, Sialkot, and 159 at the Mission Hospital, Ferozepore. The lady doctors who distinguished themselves for their surgical work during 1913 are Dr. Edith Brown who performed 232 selected operations, Dr. M. White, 200 and Dr. Allen, 159.

POLICE HOSPITALS

The following remark is of interest —

"There is nothing particular to be said in regard to the Police Hospitals. They are 30 in number and all

treat in door patients. Most of these institutions are in charge of the sub assistant surgeon attached to the local jail. The police hospitals are by no means popular among the sub assistant surgeons and appointment to them is considered penal. The reason is that no local allowance is attached to these institutions and they afford no income from private practice. The prophylactic issue of quinine to the police force during the malarial months is insisted on and has been followed with good results."

Too little information is given as to the work of Itinerating Dispensaries, "they are excellent things in their way," we are told, but they cannot be allowed to be regarded as substitutes for stationary hospitals and dispensaries—a point recently emphasised by Colonel King, I.M.S., i.e.t.d., in a letter in our September issue (p. 370).

The following paragraph is of interest—

Female Medical Aid and Education—It is encouraging to see signs of activity in the matter of female aid and education and as time goes on there will undoubtedly be great advances in this direction. The Women's Medical Service for India which has just been created will go a long way to give a strong impetus to this very important and pressing need of the country and the efforts of the members of this service who will be lent to Government, local bodies and special institutions, coupled with those of the missionary societies, will certainly bring about a marked change in the attitude of the people and the extension of medical science to women must win its way in the end. In this connection it might be mentioned that the services of Dr. Margaret Balfour have already been secured as Assistant to the Inspector General of Civil Hospitals to inspect Zenana hospitals and women's wards in ordinary hospitals in the Province, with a view to suggesting improvements generally. It is, however, impossible to expect sudden results owing to the extreme conservativeness of the Indian Zenana. Qualified lady doctors are already in charge of the female department of the Civil Hospitals at Jullundur, Hoshiarpur, Ludhiana, Amritsar, Simla, Rawalpindi and Multan, while female sub assistant surgeons are attached to the Female Wards in the Civil Hospitals at Gurgaon, Gurdaspur, Sialkot, Gujranwala, Gujarat, Jhang and the City Branch Dispensary for females at Multan. The Female Mission Hospitals in the Province continue to do an incalculable amount of good."

Another matter emphasised by Colonel Bamber is the need of equipment. Fine buildings are useless as hospitals unless well equipped and endowed. This is a point not seldom forgotten by donors and it is worth calling attention to.

"The medical reference library which is maintained in this office is open as a lending library to medical officers and subordinates of all classes and is freely used by them. Several new books costing nearly Rs. 3,000 have been purchased and added to the library during the triennium, and judging from the number of books taken on loan there is no doubt that it supplies a much needed want."

The report is a very interesting one and a record of splendid work.

BURMA HOSPITALS

The triennial report is an encouraging one and was submitted by Colonel A. O. Evans, I.M.S. Nearly one million more patients attended the Government Hospitals than in the previous three years.

Colonel II. Caruthers, I.M.S., was Inspector-General for two out of the three years reported on.

The following extracts are of special interest—

"There is no doubt that malaria is accountable for an enormous amount of sickness resulting in general deterioration of health, which again is liable to render individuals susceptible to attack by other diseases, and thus greatly to enhance general sickness and thereby also to predispose to an increase of invaliding. The generally swampy nature of much of Lower Burma and the existence in Upper Burma of similar tracts of swampy country conduces to conditions which favour malaria. Many detachments of Military Police are perforce posted in these malarial localities and the issue of quinine, prophylactically combined with the provision of mosquito nets, has been used as the chief means of combating the disease. In the opinions of many medical officers this measure and also the oiling of all stagnant water have materially aided in reducing the number of admissions."

Appendicitis—A steady increase in the number of cases treated for appendicitis has been returned. Lieutenant Colonel Barry, the Medical Superintendent of the Rangoon General Hospital, is inclined to think that this increase is due to the public gaining confidence in the adoption of operative measures for the removal of this disease. The mortality is attributable to neglected cases being admitted with signs of general peritonitis. Cases admitted early did remarkably well.

Tubercular Diseases.—In Rangoon, a marked decrease in the number of patients treated for tubercular diseases was noticed, but the Medical Superintendent, General Hospital, Rangoon, reports that no explanation can be suggested for this decrease.

Beri beri possesses no separate entry in Statement C which gives the diseases under which figures may be returned, and therefore no definite figures can be given as to its exact prevalence, but there is reason to believe that the disease does exist to a very considerable extent in endemic form in many parts of the province and investigation as to its prevalence, and especially as to its connection with the over milling of rice, is being undertaken by the Sanitary Department. The Civil Surgeon, Mandalay, reports its prevalence in that town mostly among poor and underfed coolies. The disease appeared in March 1913 in the Burma Provincial Police Training School, Mandalay, and two cadets died. Enquiry was held in September 1913 when it was found that the rice supplied was milled in one or more of the local rice mills. The percentage of phosphorus pentoxide in this rice was found on analysis to be much too low and the inference to be drawn therefore is that the rice was over milled. This rice was at once stopped and handmilled rice substituted. A few cases subsequently occurred but none proved fatal and in all probability these cases had contracted the disease before the fresh rice was brought into consumption. The Civil Surgeon of Mandalay reports also that some cases were admitted from the Government Normal School pupils and that the rice consumed contained an extremely low percentage of phosphorus pentoxide. After the substitution of handmilled rice, no further cases were reported.

Travelling dispensaries—Two travelling dispensaries have been in operation for many years in the province, one in the Akaikan Hill Tracts and the other in the Myelit Sub division of the Southern Shan States (between the countries of the Shan and Burman), where 5,508 out patients were treated with a daily average of 30 (these figures are not shown in Statement E). In connection with an outbreak of malaria in the Môn Canal area of the Minbu district, the question of organising itinerant medical assistance with a view to combat local and special diseases, was considered. Two travelling dispensaries were established in the Môn Canal area as an experimental measure. A scheme, drawn up to establish travelling and floating dispensaries in this

province, where they are likely to prove a success, received the general support of all the officers consulted and it has been approved by Government. It will be introduced gradually and its working be carefully watched. A sum of Rs 16,000 has been allowed in the budget estimate for 1914-15 under this head.

The total number of surgical operations performed during the triennium which rose from 43,116 in 1911 to 46,618 in 1912 has fallen to 45,473 during 1913. Comparing the number of operations performed in 1913 with those performed in 1910, the last year of the previous triennium, there has been an increase of 5,003, or of over 12 per cent, during the three years. The death rate among the patients operated on in 1913 was 68 per cent against 79 per cent in 1912 and 64 per cent in 1911 and the death rate per cent of the triennium was 70 against 65 in the preceding triennium.

Several headquarter hospitals in the province were supplied with additional instruments and appliances from the funds allotted under special equipment grant.

There has been a marked increase during the triennium in the number of selected operations performed in the various institutions as shown below as compared with the figures of the previous triennium —

Nature of operations	1911	1912	1913	Total 1911-13	Total 1908-10
Amputations	282	308	320	910	656
Trephining the skull	89	91	82	262	273
Laparotomy	103	106	113	327	313
Cataract extraction	96	128	113	337	315
Iridectomy	101	98	98	297	183
Excision of eyeball	16	22	39	77	62
Hernotomy	168	217	230	615	411
Abscess of liver	43	39	43	125	81
Lithotomy	7	5	7	19	33
Lithotripsy	53	46	46	145	108
Litholapaxy	14	14	12	40	61
Ovariectomy	72	81	26	179	41
Hysterectomy	18	29	44	91	42
Excision of vermiform appendix	19	68	59	146	76

The major portion of the total operation work has been carried out in the Rangoon General Hospital and this is remarked upon separately. In the other hospitals a very considerable number of important operations with increasingly good results have been performed especially in the larger headquarter hospitals and, in general, results have shown reduced death rates. The latter is only to be expected with the greater care now devoted to asepticism and the improvement which has taken place in operation rooms. There has not been any appreciable increase in the number of operations for stone in the bladder during the last year, but there has been a large increase in the number of eye operations. The operation for radical cure of hernia has also shown a very considerable increase, while important operations, such as ovariectomy and hysterectomy taken together, have more than trebled. There is no doubt that confidence in the Surgeon has increased and is steadily increasing.

The effect of the institution of the new General Hospital, on medical work in Rangoon, may be judged from the figures of attendance for the first three years of the existence of that institution. A large increase has occurred in the number of patients.

Year	Total of patients	Men	Women	Children
1908-10	186,879	142,324	28,581	15,974
1911-13	238,252	177,882	40,894	19,476
Increase	51,373	35,558	12,313	3,502

A steady increase in the number of major operations performed is also noticeable. This progress has been especially marked in the Gynaecological Department as will be seen from the table below —

Year	General abdominal operations	Abdominal gynaecological operations	General gynaecological operations
1908-10	605	95	125
1911-13	914	413	282
Increase	309	318	157

During 1908-10 altogether 760 abdominal operations were performed giving an average of 233 such operations yearly. During 1911-13 altogether 1,327 abdominal operations were carried out or a yearly average of 442. The Gynaecological Department was opened in 1910. Since that time the yearly average of gynaecological abdominal operations has been 122 and of general gynaecological operations 90. Previous to that date the average of this class of abdominal operations was 10 and of general gynaecological operations 23.

We note that Lieutenant-Colonel Kanta Prasad, I.M.S. (ret'd), has contributed ten thousand rupees to the new hospital at Shwebo, and Mr. Cargill of the Burma Oil Company has given a big donation to another hospital.

The following review of the work and prospects of the Medical School is taken from the Government Resolution on the Report. The Report on the School is written by Major Peter Dee, I.M.S. —

"The Government Medical School was removed to the old General Hospital compound, and a hostel established in connection with it, in the year 1912. A private Hostel Fund was constituted and, with the exception of an annual subvention of Rs 100 from Government for athletics, is self supporting. The school was opened in February 1907, and was originally sanctioned as an experimental measure, subject to a report after the completion of five years of its existence. In 1912 the required report was submitted to the Government of India. It was admitted that the school had not been altogether a success, but it was urged that it was not fair to judge it on its initial results, that the senior students were considered more promising than their predecessors, and that the school was becoming better known and the advantages of the Subordinate Medical Service better appreciated. The continuance of the school for a further period of five years was recommended, subject to certain improvements in the teaching staff. Sanction to this proposal was accorded by the Secretary of State in May 1913, and each subject taught has now its special lecture, whereas before the two whole time Assistant Surgeons attached to the school had been overburdened with a medley of subjects which they were expected to teach. Arrangements have also been made whereby final-year students are sent to Madras for a short course of practical training in midwifery at the Government Maternity Hospital, Madras. The arrangement is not an ideal one, it is expensive and inconvenient, and is open to the grave objection that it makes the practical training follow the theoretical, whereas both should be imparted during the same period of study. There are, however, difficulties in the way of establishing a Government Maternity Hospital in Rangoon, and until this can be done the present arrangements for midwifery training must be accepted. In view of the recent changes in the teaching staff, a consideration of the results obtained within the last three years is perhaps unnecessary. It is satisfactory to note that in the final examination of March 1913, ten passed out of twelve, while in 1914 there was only

[Nov., 1911]

one failure among nine candidates His Honour is also glad to learn that all ten of the public students for 1913 were Burmans, and that the standard of educational qualifications among those admitted is steadily rising"

Correspondence

ANESTHETICS IN HOT CLIMATES

To the Editor of "THE INDIAN MEDICAL GAZETTE"

SIR.—In continuation of my letter under this heading published in your June number, I should like now to add a few words with reference to the communication from Messrs May and Baker in the *Indian Medical Gazette* for September. It appears I made a technical error in using the term methyl instead of methylated, but, with regard to the kind of ether employed in India, so far as my information goes, that issued by the Government Medical Stores for anaesthetic purposes is still the ordinary B P variety, "prepared from ethyl alcohol." My last consignment is labelled "Aether Purificatus B P specially prepared from Ethyl Alcohol," and the price quoted for this in the stores price list is Rs 7 4 0 a pound. The main point at issue is the question of the reliability, for practical purposes, of the so-called methylated ether, which I am glad to find from Messrs May and Baker's statement is even cheaper than I had said, and the testimony of that firm to the effect that methylated ether is in use in practically all the large hospitals in England would appear to dispose of this once for all. The matter is not unimportant, in view of the fact that one sometimes hears an objection raised to the use of ether in hot climates on the score of the great expenditure owing to increased evaporation, and the consequent heavy cost if B P ethylic ether is used.

RAJKOT,
23rd September, 1914 }

Yours faithfully,
A. HOOTON,
MAJOR, I M S

INTRAVENOUS QUININE IN MALARIA

To the Editor of "THE INDIAN MEDICAL GAZETTE"

SIR.—Both my own experience and the statements of such authorities as Ross, Semple, and Rogers have shaken my faith in the hypodermic or intra muscular injection with the result that now where blood examination or clinical symptoms or both shew a severe infection I give the quinine intravenously. My difficulty has been to find precise data as to dosage and dilution. These have no doubt been published, but I, and I know many others, have missed these hence I thought the publication of these cases might be useful. It appears to me that in these cases a comparatively small number of intravenous injections at intervals of several days might cure the condition and thus save the prolonged treatment otherwise necessary to eradicate the parasite.

Case 1. L, Boy aged 12, admitted 20th February, 1914, temp 103°6, on 21st, blood reported to contain benign tertian parasites in large numbers. Temp rose to 106°F brought down by sponging. 22nd Temp 103°, patient drowsy, quinine bi hydrochloride grains 7 in a pint of saline given on to Median Basilic Vein. Temp fell from 103 8 to 96 4 in 8 hours—patient collapsed—on 23rd, temp was normal and blood showed no parasites. The patient remained ten days in hospital during which time there was no further fever and no reappearance of parasites. No quinine given by mouth either before or after the injection and the boy remains well up to date.

Case 2. M G, Hospital nurse aged 18 admitted on 12th February 1914 for irregular fever. Her symptoms were suggestive of enteric. On examination of the blood she was found to have a severe malarial infection, large numbers of both malignant and benign parasites being present. Quinine hydrochloride 5 gm doses given intra muscularly on three alternate days as well as quinine grain 10 T D S by mouth by the Lady Doctor (Miss Slater M B), in charge of the case. A fourth injection was also given on the day after the third injection. This treatment while making the patients deaf did not apparently affect the number of parasites in the blood nor lower the fever. On seeing the case I decided to give quinine by hydrochloride grains 7 in a pint of saline intravenously, the temp fell within 24 hours to 97 degrees and parasites disappeared from the peripheral blood. The temp rose

again the next day, became continuous in type, and the patient proceeded to complete a very severe attack of enteric. The day after the quinine injection the patient had four severe haemorrhages from the bowel, haemorrhage recurred for several days. Convalescence was interrupted by formation of a parotid abscess with a discharge of pus from Stenson's duct on the right side, later another on the left and then an axillary abscess.

This patient had been inoculated against enteric about two weeks before admission and was discharged cured on 15th May 1914, three months after admission. This case well illustrates a combined infection, the failure of intra muscular quinine and of quinine by mouth, even though the deafness shows that it was absorbed. I do not know if the intravenous quinine predisposed to the intestinal bleeding, but in no other case of intravenous quinine have I seen signs of intestinal irritation.

Case 3. G, aged 35 admitted for fever on May 8th, 1914. Blood examination showed numerous crescents and malignant parasites on May 9th. May 10th the temp rose to 105 8 in the early morning and the patient became delirious. Five grains of quinine bi hydrochlorate given in a pint of saline, in seven hours the temp fell from 105 8 to 96 4.

Crescents were found in the blood on the evening of the day of injection also the next day (11th) when the temp rose to 100 in the evening. On the 12th there were no parasites. No further quinine was given and the temp remained normal, and the blood free from parasites till the 16th and the temp rose to 101 and rings appeared in the blood again and the patient was put on quinine by mouth 10 grains T D S. In this case I tried to see if a small dose would be effective but apparently it was too small.

Case 4. M L, Musselman, aged 24. I saw in consultation. The patient's temp 104, pulse 130, he was delirious and vomiting. Blood showed numerous malignant parasites. I advised intravenous quinine at once. This was refused, and quinine therefore given by mouth and intra muscular injection. The patient died about 21 hours after I saw him.

By comparison with the above cases I think this case would have stood a fair chance with intravenous quinine.

I propose in future in such cases to give three doses of seven grains at six days' intervals, this is founded on experience in case 3, and if opportunity occurs to watch the blood of such patients for the consecutive three months.

SFCUNDERABAD, } C BRODBENT, M.B., B.S. (LON),
9th June, 1914 } CAPTAIN, I.M.S.,
M O i/c Civil Hospital

DIGITATE TUMOURS OF THE PROSTATE, PROSTATECTOMY

To the Editor of "THE INDIAN MEDICAL GAZETTE"

SIR.—Lassi Sheikh of Punch, Mohammedan, 55 age, was admitted on July 29th, 1914, to the Kashmir Mission Hospital complaining of difficulty in passing water. On examination the prostate was found to be enlarged and a stone sounded in the bladder. On July 30th he was given chloroform, by rectal examination the size of the prostate was ascertained, and it was found that the stone which had rested anteriorly to the projection of the prostate then lay behind the projection of the prostate. On using the lithotrile it was found to be impossible to grasp the stone without grasping soft parts. There was free hemorrhage and for this reason the operation of lateral lithotomy was performed and a wedge shaped stone weighing 1 oz 5 gms was removed. The incision passed between the lobes of the prostate. The left lobe was removed with my index finger and then the right. The projections into the bladder resembled two fingers in shape and they weighed 1½ oz. The hemorrhage was considerable. Two large tubes were introduced into the bladder and the wound stitched up.

The patient made an uneventful recovery and left hospital on 17th August, 1914.

The tumour was an adenoma.

Yours, etc.,
SOMERTON CLARK, F.R.C.S. (Ed.)

KASHMIR,
September, 1914

"RICE GRUEL AND ITS EFFICACY"

To the Editor of "THE INDIAN MEDICAL GAZETTE"

SIR.—The chief obstacle which we meet in our daily practice is to regulate the diet of the patients. Most of the patients, especially of the village patients, died of starvation during their illness.

The physicians always direct the patients to take barley, sago, etc., which they are not accustomed to take. They never think whether the patients have any objection to take it, we find most of the patients rejects it and remains in starvation. Is there any food which can be replaced for them? This can be answered in the affirmative.

Sago, barley, and arrowroot which we find in the bazaar are not fresh and they are mostly adulterated. They are always mixed with unwholesome substances. The artificial foods which are found in the market are very costly and not suitable for our poor country.

The rice is the staple food of the Indians—specially of the Bengalees. Rice gruel can be placed in spite of barley, sago, etc., and can be used without hesitation. Sago, barley, etc., are not wholesome and have no nutrient value. Rice is nourishing, cooling, and easily digestible than the sago, etc. The patients cannot object to take it but we force them to refrain from it. This kind of practice will be remedied. The diet is the main medicine of the patients without which we cannot resort to medicines only. I always administer rice gruel in diarrhoea, dysentery, and fever patients but I find the result is very encouraging. The condition of the patients is found much improved and hankering for the diet is abolished. I request the medical authorities to introduce the rice gruel in place of sago and barley, etc., in the jail and other Government hospitals for an experiment. In Jail dysentery rice gruel will act as a medicine also. I can say if rice gruel is used in Jail dysentery the mortality of the jail patients will become less.

Rice gruel is to be prepared from the paddy of one or two years standing and can be used as sago or barley water flavoured with lemon juice and salt, sugar and milk.

In conclusion I beg to state that I am not the proper person to advertise the articles in the columns of your highly-reputed *Indian Medical Gazette* and I request you to publish it if your honour think it proper.

BENI MADHAB DE, M.A.,
Phansidewah Dispensary,
Dt Darjeeling

ABDOMINAL WOUNDS ON THE BATTLEFIELD

To the Editor of "THE INDIAN MEDICAL GAZETTE"

SIR,—Will you allow me space to protest in the strongest manner possible against the misleading article on the above subject quoted from the "Military Surgeon" in your August issue. At ordinary times the article might be passed over with silent contempt, but as the greatest war on record is now being waged, this must not be, lest some well-meaning but impressionable subordinate may be led in to putting these pernicious principles into practice.

Put briefly the writer bases his conclusions on these premises:

(1) That the one danger of penetrating bullet wounds of the abdomen is due to general peritoneal infection from the escape of intestinal contents—"endogenous infection".

(2) That drainage effected with "a piece of bandage, clean linen handkerchief, shirt, etc., twisted into a wick of about 3 inches between the fingers" and pushed into the abdominal cavity after enlargement of this wound, if necessary, is an efficient preventative, "provided it be applied within an hour or two".

(3) That the asepsis of this drain, "desirable but impracticable" does not matter.

Premise No. 1, though partly true overlooks the following acts: (a) That in a considerable percentage of bullet wounds of the abdomen inflicted by high velocity bullets of small calibre, the intestines escape perforation entirely. (b) That if the intestine is perforated the contents do not necessarily escape in such quantity as to set up general peritonitis, and that small perforations may become shut off by adhesions, if the bowels are empty and kept at rest. (c) The danger of intra-abdominal haemorrhage.

Premise (2) assumes that a twisted wick of cotton is an efficient drain, whereas any practical surgeon knows that it is more likely to act as a dam than a drain.

Premise (3) ignores the obvious fact that such a drain will inevitably act as a seton, and set up peritonitis, even in those cases in which perforation of the intestine has not occurred.

It is difficult to write with restraint of this cavalier disregard of the bedrock principles of the aseptic treatment of bullet wounds, which put back the hands of the clock by decades. I do not think it is putting it too strongly in saying that the practice advocated by the writer is nothing short of malpraxis nowadays. Fortunately I am able to supply the antidote in the words of Inspector General Delorme in a paper read before the Academy of Sciences at Paris recently. He summarizes the proper treatment as "absolute repose, refraining from prolonged transport, total abstinence

from food and drink for several days, nursing of the mouth, administration of opium and placing the patient in the half sitting posture."

In other words the only permissible treatment of the subject of an abdominal bullet wound on the field of battle is, (1) to place him in a semi recumbent position, (2) to apply the first field dressing, (3) to abstain from giving him any fluid to drink and to wash him of the dangerous consequences of drinking even water, and (4) to administer a grain of morphine hypodermically. If abstinence from fluid is maintained for 5 or 6 hours, peritoneal adhesions have time to form and close a small perforation.

I am, yours faithfully,
E A R NEWMAN,
LIEUTENANT COLONEL, I M S

October 6th, 1914

THE RADICAL CURE OF HYDROCELE

To the Editor of "THE INDIAN MEDICAL GAZETTE"

SIR,—Briefly there are three special features in the performance of this operation—

I. The first and the foremost being the incision in the median raphe,

II. The second is the bringing together of the cut ends of the everted tunica vaginalis near the upper end of the Epididymis by a catgut stitch, and

III. The third is the washing out of the cavity with ether.

- (1) Perchloride of mercury lotion (1 in 1,000),
- (2) Carbolic lotion (1 in 20), or
- (3) Pure sulphuric ether 20 minims.

The chief advantages of—

I. are—
(1) The manipulation of both sacs by this single incision in the case of a double Hydrocele. This means saving of time which is a great desideratum both in the interest of the patient and the surgeon. In the case of a single Hydrocele the same incision does not entail any greater expenditure of time than in the one in vogue.

(2) Less bleeding as the area operated upon lies in the middle line of the body and hence fewer and smaller blood vessels are cut.

(3) Less pain—as for the same reasons, fewer and smaller nerve filaments are divided.

(4) Cheaper, for obvious reasons.

II. The chance of the everted tunica vaginalis becoming re-inverted are absolutely nil.

III.—(1) Sepsis almost altogether obviated. I personally prefer the pouring in of 20 minims of pure sulphuric ether after washing out the sac with 1 in 1,000 perchloride solution.

(2) Adhesion of the endothelial layer of the visceral tunica vaginalis to the inner surface of the infundibuliform fiscer thus aiding II.

My only plea for putting this small article in this paper of wide circulation is the possibility of my fellow brethren in profession being benefited by this change of procedure in this special operation which ranks next to cataract operations in number and importance at any rate in this Province. I might add that so far as I have read the literature on this special subject I have not found it mentioned anywhere nor have I seen any surgeon performing this special operation in this special way, although I have worked with many surgeons.

Yours, etc.,

E MILLICAUS KHAN, M.B. (Punjab)

RADICAL CURE OF HERNIA

To the Editor of "THE INDIAN MEDICAL GAZETTE"

SIR,—I read with great interest the interesting paper of Lt Col Newman, under the above heading, read before the medical section of the Asiatic Society of Bengal and published in your valuable journal of August 1914. Perhaps it may be of interest to him to know that I have myself performed a similar operation which he describes as a new method, for the past 9 years both at the Colombo General Hospital and at the Victoria Hospital, Bangalore. The only difference in technique between his method and mine is that he fixes the neck of the sac to the abdominal wall but I simply drop it into the abdominal cavity as in Bassini's. But in the main, from the incision down to the final closing of the wound my procedure has been very much alike.

I too divide the aponeurosis of the external oblique to the full extent of the skin incision, as this gives ample space to work on, and also in the case of strangulated hernia, the reduction is rendered very easy. Besides if the

sponeurosis of the external oblique is not divided, it is impossible to unite the conjoined tendon to the Poupart's ligament I only use a scalpel for it

I always make it a point to separate the sac as far as its neck. This is very important. I have never found it so easy as to separate the tissues of the cord off the sac with a gauze swab. I have to use a pair of dissecting forceps for the purpose. When the sac is separated, it is opened at its distal end and the contents examined. The distal end is then caught in a pair of Spencer Wells' forceps and twisted until it forms a thick cord. The neck of this cord is transfixed by an aneurysm needle, is close to the abdominal wall as possible, and ligatured with a stout silk ligature, in two halves, each half being made to interlock the other, to prevent slipping of the ligature, and the sac excised beyond the ligature.

With regard to the repair of the abdominal wall, I am of the same opinion as Newman, that no operation for the radical cure of an inguinal hernia is complete without it. I am fully aware that opinion is divided on this point. Some surgeons are of opinion that a hernia is always caused by the persistence of a peritoneal diverticulum, in this case the processus vaginalis. Whatever may be the original cause of a hernia, one cannot deny the abdominal wall in the region of the hernia is rendered weak by the disturbance of the normal relations of the structures joining the inguinal canal. If one should examine the bottom of the abdominal wound after excision of the sac, he would not fail to notice a large gap bounded above by the conjoined tendon and below by the Poupart's ligament and the floor by this space joined by the fascia transversalis, subperitoneal fatty tissue, and the peritoneum. Now if we leave this space unprotected what guarantee is there that this may not form a weak spot for a direct hernia in the near future. Therefore, I always make it a point to unite the conjoined tendon to the Poupart's ligament, with 3 or 4 metres silk sutures of medium thickness as this is the only possible way to close this gap in the abdominal wall. I prefer silk, as this material can be easily sterilized by boiling and as it is not quickly absorbed. Some surgeons think that a muscle and a tendon can hardly unite with each other, and, therefore, they omit this part of the technique. But my experience has convinced me that union does take place sufficient to prevent the formation of a hernia, if no septic injection of the wound takes place.

With regard to the spermatic cord, there is no special advantage, to my mind, in placing it over the conjoined tendon as in Bassini's operation. I find it easy to unite the conjoined tendon and the Poupart's ligament over the cord, leaving just enough space at the external ring to prevent any undue pressure on it. The thigh is always placed to rely the parts before the sutures are tied.

I have now performed more than 200 operations for the radical cure of inguinal hernia according to this method and the results have been very gratifying.

Yours, etc.,

H. H. MYLVAGANAM, F.R.C.S. (ENG.),
Surgeon to Victoria Hospital, Bangalore

THERAPEUTIC NOTICES

The Proprietors of HORLICK'S MALTED MILK (Messrs D J Keymer & Co, London) ask us to draw attention to the fact that there is no increase, owing to the war, in the price of this excellent food drink, which is much used in the tropics.

We have been asked to republish this letter, which appeared in *The Lancet* and in *B.M.J.*

"A SWISS FIRM"

To the Editor of "THE LANCET"

SIR.—An impression appears to prevail in some quarters that we are a German house, and as such are no longer able to supply Roche Products. Both impressions are quite erroneous, the first, no doubt, being due to the fact that we have laboratories and works in Gienzach (Baden). Our head offices and laboratories are, however, at Basle (Switzerland), where we have been established for many years.

With regard to the second point, we are taking steps to announce the fact that we have large reserve stocks, and not only anticipate no difficulty in filling orders, but, furthermore, do not propose to increase the prices.

We are, Sir, yours faithfully,

THE HOFFMANN-LA ROCHE CHEMICAL
WORKS, LTD."

IDOL LANF, E C, Sept 2nd, 1911

Service Notes.

CIVIL DEPARTMENT, PUNJAB

THE following officers of the Civil Department of the Punjab have reverted to military duty—

Lt Col R Heard, I M S, Professor of Midwifery, Medical College, Lahore

Majoi D H F Cowin, I M S, Medical Adviser, Patiala State

Majoi J G G Swan, I M S, offg Civil Surgeon, Rawalpindi

Major S H Lee Abbott, I M S, offg Civil Surgeon, Multan

Major H Halliday, I M S, Civil Surgeon, Lyallpur

Major W A Needham, I M S, Health Officer, Simla

Captain A K Laudie, Civil Surgeon, Dera Gazi Khan

Major W W Jeudwine, offg Civil Surgeon, Ferozepur,

Major H C Keates, I M S, offg Civil Surgeon, Multan

Captain R T Wells, offg Civil Surgeon, Jhelum

Captain N M Wilson, offg Civil Surgeon in the Punjab

Captain G S Husband, I M S, offg Superintendent, Central Jail, Multan

On recall from leave the following officers were posted as follows—

1 Lt Col A Coleman, I M S, to be Civil Surgeon of Rawalpindi

2 Lt Col E V Hugo, I M S, to his substantive appointment as Professor of Surgery, Lahore Medical College

3 Lt Col S Browning Smith, I M S, to be officiating Sanitary Commissioner, Punjab

4 Lt Col R Heard, I M S, to his substantive appointment as Professor of Midwifery, Lahore Medical College

5 Major W C H Forster, I M S, to his substantive appointment as Professor of Pathology, Lahore Medical College

6 Major S H Lee Abbott, I M S, to be Civil Surgeon, Multan

7 Major R M Dalziel, I M S, to his substantive appointment as Superintendent, Central Jail, Multan

8 Captain W T Finlayson, I M S, to his substantive appointment as Superintendent, Borstal Central and Female Jails, Lahore

The following officers of the Plague Department in the Punjab have reverted to military duty in connexion with the war—

Major C E Southon, I M S

Major J Woods, I M S

Captain K Shumsher Singh, I M S

Captain P S Mills, I M S

SANITARY DEPARTMENT

Lt Col S Browning Smith, I M S, on recall from leave, was appointed officiating Sanitary Commissioner, Punjab, vice Major E L Perly, I M S, who has reverted to military duty

Major H M H Melhuish, I M S, on transfer to military duty, was relieved by Major H M Mackenzie, I M S

SURGEON GENERAL TOM GRAINGER, C.B., I M S, gets the good service pension of £100 per annum, vacated by Col Neil Campbell C.B., C.I.E., retired, and Surgeon General G F A Hairis, C.S.I., F.R.C.P., gets the good service pension vacated by Surgeon General A M Crofts C.I.E., retired in May last. Both these good service pensions will cease on the holder's retirement, as both officers will then have earned the extra pension of a Surgeon General (v. Seton and Gould's Manual, I M G, page 120).

DR WALTER ACTON, of West End, near Southampton, a Crimean Veteran, died there on 8th August 1914. He was born at Ludlow in 1826, educated at University College, London, and took the M.R.C.S. and L.S.A. in 1850. He served as a temporary Assistant Surgeon during the Crimean war, holding the post of Staff Surgeon to the Osmanli Cavalry for two years. After the war was over he practised for a short time at Stilton, and afterwards at Newcastle under Tyne. He retired from practice in 1887, and since 1893 had lived at West End.

LIEUTENANT COLONEL DANIEL FRANCIS BARPY, Bengal Medical Service, retired, died on 13th July 1914. He was born on 27th January 1855, educated at Queen's College, Cork, took the M.D., M.Ch., and L.M. of the long defunct Queen's University in Ireland in 1877, and entered the I M S as Surgeon on 30th September 1878. He became Sui-

geon Major on 30th September 1890, Lt Colonel on 30th September 1893, and retired on 10th December 1903. He served on the North East Frontier of India, in the Naga Hills Campaign of 1879-80, and received the frontier medal with a clasp. Most of his service was spent in civil employment in the North West, now the United Provinces.

LIEUTENANT COLONEL CHARLES MALCOLM MOORE, of the Bombay Medical Service, died at Quetta of an accidental gunshot wound, on 23rd July 1914. He was born on 4th February 1864, the son of David Moore, Director of the Botanical Gardens at Glasnevin, Dublin, and educated at Trinity College, Dublin, where he took the degrees of B.A., M.B., B.Ch., and B.A.O., in 1888, proceeding to the M.D., M.A.O. and D.P.H., in 1889. Entering the I.M.S. as Surgeon on 30th March 1889, he became Major on 30th March 1901, Lt Colonel on 30th March 1909, and was placed on the selected list from 13th June 1913. He served on the North West Frontier of India in the operations in the Kurram Valley in August and September 1897, medal with two clasps, in the Tirah Campaign of 1897-98, in the reconnaissance of the Kharman defile, and action of 7th November 1897, and in the operations against the Khans Khel Chamkannis, clasp, and in China in 1900, medal. For the last ten years he had been medical officer of the 106th Hazara Pioneers, which was raised at Quetta in 1904. He had returned from a year's furlough in England only three months before his death.

LIEUTENANT COLONEL CHARLES DUNN, Bengal Medical Service, retired from 29th November 1913, his retirement, however, was gazetted only on 8th September 1914. He was born on 10th December 1864, educated at University College, London, took the M.R.C.S. and L.R.C.P., London, in 1888, the M.B. London, in 1899, and the F.R.C.S. England in 1891, and entered the I.M.S. as Surgeon on 28th July 1891, one of the last batch to enter before the rank of Lieutenant was introduced. He became Major on 28th July 1903, and Lt Colonel on 28th July 1911. The Army List assigns him no war service. Most of his service was spent in civil employ in Burma, after which he was appointed Joint Civil Surgeon of Simla, and since 2nd May 1912 he had been on leave.

AMONG the numerous travellers from England, who found themselves in Germany or Austria when war was declared, and had considerable difficulty in getting away, was Surgeon General Sir Benjamin Franklin, K.C.I.E., who was Surgeon General and Sanitary Commissioner with the Government of India from 1885 to 1890. He was at Marienbad, and thence made his way to Switzerland.

WAR CASUALTIES

THE first list of casualties in the British expeditionary force in France were published in the Times of 2nd September. They include the losses of about one half the force, but presumably that part of the force which was most heavily engaged, up to the 29th August. The total number recorded is somewhat over 5,000, a number smaller than had been feared.

Killed	Officers	36	Other ranks	127
Wounded	"	57	"	629
Missing	"	95	"	4,183

Among the latter would, of course, be included all stragglers, many of whom have since turned up, and prisoners, about whom no information had been given up to the date of writing (Sept 4th). It was only to be expected that a force, which had been fighting a series of severely contested actions against greatly superior numbers, while slowly retreating in good order, should have a very large number of missing. The number of medical officers shown in this category is presumably due to the fact that the field hospitals had been left behind in the execution of their duty, the treatment of the wounded.

The names of the officers included in the casualty lists were published in the Times of September 3rd. The regiment which has suffered most severely is the "Koylies," the King's Own Yorkshire Light Infantry, which lost eleven officers killed, almost one third of the total number killed, besides two wounded and three missing. Among those killed were Colonel R. C. Bond, D.S.O., Captain A. C. G. Luther, late racket champion of the army, and Captain W. E. Gatacre, eldest son of the late Major General Sir William Gatacre. All three had served through the South African war. The medical officers whose names appear in the list are —

Wounded — Captain T. H. Gibbon
Missing — Colonel H. N. Thompson, Major P. H. Collingwood and F. S. Irvine, Captains R. J. Cahill, W. Egan, J. P. Lynch, H. E. Priestley, and A. A. Sutcliffe, Lieutenants A. G. Brown, S. M. Huttonsley, H. W. Hills, C. L. Lauder, and L. M. Routh.

Only the three senior officers had any previous war service, all the lieutenants were civilian practitioners, who had only recently joined the R.A.M.C. on mobilisation.

COLONEL HENRY NEVILLE THOMPSON was educated at Trinity College, Dublin, where he took the M.B., B.C.H. in 1883, and entered the Army as Surgeon on 2nd August 1884, becoming Surgeon Major on 2nd August 1899, Lieutenant Colonel on 2nd August 1901, and Colonel on 17th November 1913. He was recently stationed at Edinburgh, as C.M.O. of the Scottish Division. He served in the Nile campaign of 1898, receiving the medal and Egyptian medal, and in South Africa in 1900-02, when he took part in the relief of Kimberley, and was present in the actions at Paardeberg, Poplar Grove, Kroo Siding, Vry River, Zand River, Johanneburg, Pietoria, and Diamond Hill, also in minor operations in the Transvaal, Orange River Colony, and Cape Colony. He was mentioned in despatches in the London Gazette of 15th November 1901, and received the Queen's medal with five clasps, and the King's medal with two clasps, as well as the D.S.O.

MAJOR PLUTO HILDIBRAND COLLINWOOD was educated at St. Thomas', took the L.S.A. in 1897, and entered the Army as Surgeon Lieutenant on 28th January 1898, becoming Captain on 28th January 1901, and Major on 28th January 1910. He served in the Aden Hinterland in 1903-04, and was recently stationed in Calcutta.

MAJOR FRANCIS STEPHEN IRVINE was educated at Queen's College, Belfast, took the M.B., B.C.H., and B.A.O. of the Royal University, Ireland, in 1899, and entered the Army as Lieutenant on 17th November 1899, becoming Captain on 17th November 1901, and Major on 17th November 1911. He was recently stationed at the R.A.M.C. College, London. He served in the South African war in the Orange Free State, Transvaal, and Zululand, was present at the relief of Lady Smith, and in the actions of Spion Kop, Vaalkrantz, and Tugela Heights, and received the Queen's medal with four clasps, and the King's medal with five clasps.

CAPTAIN THOMAS HOLROYD GIBBON was educated at Trinity College, Dublin, where he took the M.B., B.C.H., and B.A.O. in 1903, also the M.D. of Durham in the same year, and entered the Army as Lieutenant on 31st January 1905, becoming Captain on 31st July 1908. He was recently stationed in Dublin.

CAPTAIN JOHN PATRICK LANCE was at Queen's College, Cork, took the L.R.C.S.I. and L.R.C.P. in 1903, entered the Army as Lieutenant on 31st July 1904, and became Captain on 31st January 1908. He was recently stationed at Canterbury.

CAPTAIN HAROLD EDGAR BRIERLEY was at St. George's, took the M.R.C.S. and L.R.C.P., London in 1905, entered as Lieutenant on 31st July 1905, and became Captain on 31st January 1909. He was recently stationed at the R.A.M.C. College, London.

CAPTAIN ARCHIBALD ALFRED SUTCLIFFE was a student of St. Thomas', took the M.R.C.S., L.R.C.P., London, and M.B., B.S., London in 1905, entered as Lieutenant on 30th January 1905, and became Captain on 31st January 1909. He was recently stationed at Chester.

CAPTAIN ROBERT JOHN CAHILL was at the Catholic University, Dublin, took the M.B., B.C.H., and B.A.O. of the Royal University, Ireland, in 1903, entered as Lieutenant on 30th January 1904, and became Captain on 30th July 1907. He was recently at Belfast.

CAPTAIN WILLIAM EGAN was at Queen's College, Cork, and the Catholic University, Dublin, took the M.B., B.C.H., and B.A.O. of the Royal University, Ireland, in 1904, entered as Lieutenant on 30th January 1906, and became Captain on 30th July 1909. He was lately serving at the R.A.M.C. College, London.

LIEUTENANT LAWRENCE MELVILLE ROUTH was at Cambridge and St. Thomas', took the M.R.C.S. and L.R.C.P., London, in 1909, the B.C. Cambridge, in 1910, and the M.B. in 1911, and joined the Special Reserve of the R.A.M.C. on 6th February 1911. He was Clinical Assistant at the West End Hospital for Nervous Diseases.

LIEUTENANT HAROLD WILLIAM HILLS was at University College Hospital, took the B.Sc. London in 1909, the M.B. and B.S. in 1913, also the M.R.C.S. and L.R.C.P., London, in 1913, and entered the Special Reserve on 16th May 1912. He was Assistant Medical Officer at Long Grove Asylum, Epsom.

LIEUTENANT CHARLES LLEWELLYN LAUDER was at London Hospital, took the B Sc, London, in 1894, the M B in 1899, and the B S in 1900, also the M R C S and L R C P London in 1898. He was Assistant Surgeon of the Royal Albeit Hospital, Devonport.

LIEUTENANT SIDNEY MARTIN HATTERSLEY was at Cambridge and St Bartholomew's, took the B A Cantab, in 1900, the M R C S and L R C P London, in 1912. He served in the Balkan war in the hospital of the Red Crescent Society at Scutari, and was in practice at Maida Vale, London.

LIEUTENANT ANDREW JOHNSTONE BROWN took the L D S of the Edinburgh College of Surgeons in 1907, and the Scottish triple qualification in 1909. He is Assistant Tutor in the Edinburgh Dental Hospital and School, joined the Reserve on 29th March 1912, and the 3rd Lowland Field Ambulance on 10th May 1913.

A SECOND list of casualties was published in the *Times* of 5th September. It gave the names of 16 officers killed, 58 wounded and 94 missing. Among the missing were nine officers of the R A M C, Major J H Brunskill, Captains G J H Brown, W Crymble, P Dwyer, C T Edmunds, and H B Kelly, Lieutenants T H Bell, P P Butler, and M K Nelson.

A THIRD list, published in the *Times* of 8th September, is brought up to 4th September. In it were given the names of 10 officers killed, 29 wounded, and 46 missing. Two regiments had suffered especial loss. All the officers of the Gordon Highlanders were included, two killed, one wounded and eighteen missing, among the latter Lieuts C M Usher and Second Lieut R D Robertson, Scottish Rugby Internationals. The Royal Irish lost one killed, two wounded, twelve missing, the officer killed being Lieut Charles Barry Gibbons, elder son of Lieut Colonel James Barry Gibbons, I M S, retired late Civil Surgeon of Howrah. Four officers of the R A M C appeared in the lists, Captains M Leckie and H M Perry, wounded, Major H W Long and Captain J H M Graham, missing. None of the R A M C officers whose names are given in these two lists had any previous war service.

MAJOR JOHN HANDFIELD BRUNSKILL took the M B, B Ch and B A O Dublin in 1900, the D P H at the same University in 1903, entered the Army on 29th November 1900, became Captain on 29th November 1903, and Major on 29th August 1912. He was recently stationed in Dublin.

MAJOR HENRY WILLIAM LONG took the same degrees in the same year, also at Trinity College Dublin, entered on 27th June 1902, became Captain on 19th May 1905, and Major on 27th June 1913. His late station was Devonport.

CAPTAIN GEORGE HERBERT JAMES BROWN took the M B, B Ch, of Edinburgh in 1899, entered as Lieutenant on 31st January 1903, and became Captain on 31st July 1906. His station was Aberdeen.

CAPTAIN WILLIAM CRYMBLE was educated at Queen's College, Belfast, and at Dublin, took the L R C S I and L R C P I in 1909, and joined the Reserve as Lieutenant on 13th January 1911. He was in practice at Derry, County Down.

CAPTAIN PATRICK DWYER, was educated at the Catholic University, Dublin, took the M B, B Ch, and B A O of the Royal University, Ireland, in 1903, entered the Army on 30th July 1904, and became Captain on 30th January 1908. He was stationed in Dublin.

CAPTAIN HARRY BEATTY KELLY took the M B, B Ch, and B A O, at Dublin in 1902, entered on 31st January 1903, and became Captain on 31st July 1906. He was stationed at the Curragh.

CAPTAIN MALCOLM LECKIE took the M R C S I and L R C P, London, from Guy's in 1907, entered on 4th February 1908, and became Captain on 4th August 1911. He was recently in the Egyptian Army.

CAPTAIN HARRY MARIAM JOSEPH PERRY was at Queen's College, Cork, took the L R C P I and L R C S I in 1906, became Lieutenant on 28th January 1907, and Captain on 28th July 1910. His station was Devonport.

CAPTAIN JAMES HERRIES GRAHAM took the M B and B S (with honours) at Durham in 1902, entered on 28th July 1905, and became Captain on 31st January 1909. He was recently stationed at York.

LIEUTENANT MALCOLMSON KNOX NELSON was at Queen's College, Belfast, and Guy's, took the M R C S and L R C P, London, in 1908, and became Lieutenant in the Reserve on 15th October 1912. He was in practice at Belfast.

LIEUTENANT PERCY P. BUTLER received a temporary commission in the R A M C in August 1914. His name is not in the *Medical Directory* for 1914, so presumably he qualified during the present year.

LIEUTENANT T H BELL. This name cannot be identified either in the *Medical Directory* or the *Army List*. Probably it is Lieutenant John Henry Bell, V B and B Ch, Edinburgh, 1909 who received a commission as Lieutenant in the Reserve, on 21st June 1910.

A FOURTH list of casualties appeared in the *Times* of 18th September. It included nine officers killed, nine wounded and missing, 51 wounded, and 39 missing, total 108. For the first time the name of a medical officer is given among the killed, Captain A S Williams. This, we think, is the first fatal casualty in the R A M C since the Boer war. The I M S has lost two killed in action in the present century, Lieutenant Colonel Charles Bradley Maitland, of Bombay, killed in Jubaland, East Africa, on 16th February 1901, and Captain Francis Wheeler Sime of the General List, who fell at Gumburu, Somaliland, on 15th April 1903.

In this fourth list there is one medical officer wounded, while ten were returned as missing—Captain Holden is the only one who had any previous war service.

Killed Captain A S Williams.

Wounded Captain C W Holden.

Missing Captains P C T Davy, E B S Hamilton, H C Hildreth, A D O'Carroll, G H Rees, M Sinclair, W C Smales and A C Vidah, Lieutenants E Davies and H J S Shields.

CAPTAIN AUGUSTUS SCOTT WILLIAMS was educated at Barts, took the M R C S and L R C P, London, in 1905, and after serving as House Surgeon to the West London Hospital entered the Army on 30th January 1906, becoming Captain on 30th July 1909. He was recently at the R A M C College.

CAPTAIN CHARLES WAITER HOLDEN was educated in the school of the Royal Irish College of Surgeons, and took the L R C S I and L R C P I in 1900, the D P H of the Irish College of Physicians, and the Diploma in Tropical Medicine and Hygiene of Cambridge in 1906. He entered the Army on 31st January 1903, becoming Captain on 31st July 1906. He had previously served as a Civil Surgeon in the South African war, in Cope Colony, and held the Queen's medal with two clasps. He was stationed in London.

CAPTAIN PHILIP CLAUDE TRESLIAN DAVY was at University College, London, took the M R C S and L R C P, London, in 1903, the B M, London, in 1904, and entered on 30th July 1904, becoming Captain on 30th January 1908. He was recently at the R A M C College.

CAPTAIN EBEN STUART BURT HAMILTON took the B M and B Ch at Edinburgh in 1910, joining the Reserve in the same year. He was in practice at Old Trafford, Manchester.

CAPTAIN HAROLD CROSSLEY HILDRETH took the Scottish triple qualification in 1900, the F R C S Edinburgh in 1902. After serving as Assistant Medical Officer on the Sierra Leone railway, he entered the Army on 31st August 1903, becoming Captain on 28th February 1907. His station was Falmoy.

CAPTAIN ARTHUR DROUGHT O'CARRON was educated at the Catholic University, Dublin, took the M B, B Ch and B A O of the Royal University Ireland, in 1904 and entered on 31st July 1905, becoming Captain on 31st January 1909. He was stationed at Aldershot.

CAPTAIN GRIFFITH HENRY REES was at Guy's, took the M R C S and L R C P, London, in 1904, the M B, B S, London in 1905, entered on 31st July 1905, and became Captain on 31st January 1909. He was recently at the R A M C College.

CAPTAIN MERVILLE SINCLAIR took the M B and B Ch, Edinburgh, in 1903, entered on 30th July 1904, and became Captain on 30th January 1908. His station was London.

CAPTAIN WILLIAM CLAYTON SMALES was at King's College, London, took the M R C S and L R C P, London, in 1903 entered on 30th January 1906 and became Captain on 30th July 1909. He was recently at the R. A. M. C. College.

CAPTAIN ALAN CUNLIFFE VIDAL was educated in the school of the Royal College of Surgeons, Edinburgh, took the Scottish triple qualification in 1903, entered on 31st July 1905, and became Captain on 29th August 1909. He was recently at the R A M. C College.

LIEUTENANT HUGH JOHN STAPLESHAW was educated at Cambridge and Middlesex, took the M R C S and R C P London in 1912, and entered the Army on 26th July 1912. His station was Purbright camp.

LIEUTENANT EVAN DAVIES is an officer of the Reserve who took the M B, B Ch at Birmingham in 1911, and was in practice in that city.

A FIFTH list, in the *Times* of 11th September, gives the names of nine officers more, one killed, six wounded, and two missing. One medical officer is returned as missing. Lieutenant H D Rankin. He took the M B and Ch B at Glasgow in 1911, served under the British Red Cross Society in the Balkan war of 1912-13, and entered the army on 25th July 1913. In the *Army List* of January 1914 his name is shown as on probation, the very last name in the corps.

It is also stated that the name of Captain G H J Brown, entered above as missing, was given in mistake for that of Captain T W Blowne, who was educated in the Irish College of Surgeons School, took the Irish double qualification in 1905 entered the army on 30th July 1906, and became Captain on 30th January 1910. His station was Tipperary.

THE light cruiser Pathfinder was sunk by an explosion, from striking a floating mine, off the East Coast of England on 5th September, with great loss of life. Among the casualties is given the name of Staff Surgeon Thomas Aubrey Smyth, severely wounded. He took the M B and B Ch at Edinburgh in 1901, entered the Navy in the following year, became Staff Surgeon on 21st November 1910, and joined the *Pathfinder* on 20th November 1913. He served as a Civil Surgeon in the South African war in 1901-02, and received the medal. Another account states that the *Pathfinder* was sunk by a German submarine.

THE services of Captain H Watts, M B, B S, M R C S, L R C P, I M S, Officiating Civil Surgeon, Betul, are replaced at the disposal of the Government of India, Army Department, with effect from the date he hands over charge.

Second grade Civil Assistant Surgeon Sakharam Ganesh Paranjape, L M & S, in charge of the Main Hospital, Betul, is appointed to officiate temporarily as Civil Surgeon, Betul, vice Captain H Watts, M B, B S, M R C S, L R C P, I M S, reverted to military duty.

MR T W QUINN, L R C P, L R C S, L R F P & S, and L M, Civil Surgeon, Drug, is transferred temporarily in the same capacity to Betul.

Under Section 6 of the Prisons Act, 1891, the Chief Commissioner is pleased to appoint Mr T W Quinn, L R C P, L R C S, L R F P & S and L M, Civil Surgeon, Betul, to the executive and medical charge of the Betul District Jail.

ON behalf by Mr T W Quinn, L R C P, L R C S, L R F P & S, and L M, 2nd grade Civil Assistant Surgeon Sakharam Ganesh Paranjape, L M & S, Officiating Civil Surgeon, Betul, is reported to the charge of the Main Hospital, Betul.

THIRD grade Civil Assistant Surgeon Narayan Ramchandran Summanwai, M B, B S, in charge of the Main Hospital, Drug, is appointed to officiate temporarily as Civil Surgeon, vice Mr T W Quinn, L R C P, L R C S, L R F P & S, and L M, transferred.

THE services of Captain W Tari, M D, F R C S, I M S, Civil Surgeon, Nimar, are placed temporarily at the disposal of the Government of India, Army Department, with effect from the date he hands over charge.

Third grade Civil Assistant Surgeon Dhanjishaw Doabji Mogul, L M & S in charge of the Main Hospital, Khandwa, is appointed to officiate temporarily as Civil Surgeon, Nimar, vice Captain W Tari, M D, F R C S, I M S, deputed to military duty.

THE services of the undermentioned officers are placed at the disposal of the Government of India, Army Department, with effect from the date they hand over charge —

1st Class Military Assistant Surgeon W W Stuart, L R C P & S, Assistant to the Civil Surgeon, Jubbulpoore
3rd Class Military Assistant Surgeon C H Mason, Assistant to the Civil Surgeon, Nagpur.

ON return from the privilege leave granted to him in Punjab Government notification No 389, dated 19th September 1914, Lieutenant Colonel G W F Braide, I M S,

resumed charge of the office of Inspector General of Prisons, Punjab, with effect from the forenoon of the 14th August 1914, relieving Major E. L. Ward, I M S.

OFFICiating Civil Surgeon N N Bose made over the medical charge of the Midnapore Central Jail to Major J B Christian, I M S, on the forenoon of the 12th September 1914.

MAJOR J W F RAIT, I M S, Superintendent of the Hooghly Jail, made over charge of the Jail to Major H B Foster, I M S, on the forenoon of the 21st September 1914.

BABU KALI MOHAN SEN, Deputy Magistrate made over charge of the Darjeeling Jail to Mr F G E Pissard on the forenoon of the 12th September 1914.

LIEUTENANT COLONEL H H WOOD, I M S, made over charge of the Chittagong Jail to Assistant Surgeon Ambika Chaitan Datta, on the afternoon of the 16th September 1914.

LIEUTENANT COLONEL WOOD has returned to Rampore Barracks on transfer of Major M Mackenzie to military duty.

CAPTAIN W D H STEVENSON, I M S, has taken the D P H of the Royal College of England.

THE following changes in the United Provinces are gazetted (20th September) —

The services of Captain R S Townsend, M B, I M S, are replaced at the disposal of His Excellency the Commander-in-Chief in India.

Military Assistant Surgeon H J J Garrod, I M S, Civil Surgeon, on being recalled from leave, to Etah.

Captain J M Macrae, I M S, Superintendent, Central Prison, on being recalled from leave, to Fatehgarh.

Major J N Walker, I M S, Civil Surgeon, on being recalled from leave, to Rae Bareli.

Major R F Bund, I M S, Civil Surgeon, on being recalled from leave to Muttra.

Major E C Hepper, I M S, civil surgeon, on being recalled from leave, to Bulandshahr.

Major E C Hepper, I M S, Civil Surgeon, was on study leave from the 7th May to the 6th June 1914.

THE special leave on urgent private affairs granted to Lieutenant Colonel J G Hulbert, I M S, Civil Surgeon, was converted by His Majesty's Secretary of State for India and extended to the 26th July 1914, the date of retirement.

CAPTAIN G HOLROYD, I M S, Officiating Superintendent, Central Prison, Bareilly, on being relieved, to plague duty, Benares.

CAPTAIN W P G WILLIAMS, I M S, Officiating Superintendent, Central Prison, Fatehgarh, on being relieved, to plague duty, Lucknow.

MAJOR J E CLEMENTS, I M S, Superintendent, Central Prison, from Agra to Bareilly

LIEUTENANT COLONEL C MILNE, I M S, Civil Surgeon, from Cawnpore to Aligarh

MAJOR R STEPHENSON, I M S, Civil Surgeon, from Aligarh to Jhansi

THE services of Lieutenant Colonel R G Turner, I M S, Civil Surgeon, Lucknow, are replaced at the disposal of the Government of India, Army department, with effect from the date on which he relinquished charge of his duties.

LIEUTENANT COLONEL A W DAWSON, I M S, to hold civil medical charge of Runki, in addition to his military duties, vice Lieutenant H W L Allott, R A M C

CONSEQUENT on the return from leave of Lieutenant Colonel J Morwood, I M S, Civil Surgeon, 1st class, Lieutenant Colonel W H E Woodwright I M S, Officiating Civil Surgeon, 1st class, to revert as Civil Surgeon, 2nd class

MAJOR F H WATLING, I M S, Officiating Superintendent of the Burir Central Jail, is allowed privilege leave for one month, under Article 260 of the Civil Service Regulations, with effect from the 5th October 1914.

THE services of Major J W D Megaw, I M S, Civil Surgeon of Monghyr, are replaced at the disposal of the Government of India, with effect from the 1st October 1914. Major Megaw has been appointed Professor of Pathology at King George's Medical College, Lucknow, and an excellent appointment it is, from the point of view of the college.

ROYAL ARMY MEDICAL CORPS

THE following is a list of the successful candidates at the July competition for commissions. There were 22 candidates

Name	Degrees, etc	Medical School	Marks
*D C G Ballingall	B A, M B Cantab, M R C S Eng, L R C P Lond	Cambridge University, St Bartholomew's Hospital, London Hospital	560
H G Winter	M R C S Eng, L R C P Lond		552
*J W Evatt	B A Cantab, M R C S Eng, L R C P Lond	Cambridge University, University College Hospital	546
*F G Thacher	M B, Ch B Univ of Edinburgh	Edinburgh University	538
*W P Mulligan	M B, Ch B Univ of Aberdeen	Aberdeen University	534
*G P Selby	B A, M B, B Ch Oxon, M R C S Eng, L R C P Lond	Oxford University, St Bartholomew's Hospital	525
*J G Butt	B A, M B, B Ch, B A O Univ of Dublin	Trinity College, Dublin	507
*N Cantlie	M B, Ch B Univ of Aberdeen	Aberdeen University, Charing Cross Hospital	497
*E A P Brook	M R C S Eng, L R C P Lond	St Bartholomew's Hospital	489
*P T Priestley	M B, Ch B Univ of Birmingham, M R C S Eng, L R C P Lond	Birmingham University	479
E Phillips	M B, Ch B Univ of Durham, M R C S Eng, L R C P Lond	Durham University, London Hospital	476
S D Reid	M B, Ch B Univ of Edinburgh	Edinburgh University	453
P J Ryan	B A, M B, Ch B, B A O National University of Ireland	National University, Ireland	411
B J L Fayle	B A Cantab, M R C S Eng, L R C P Lond	Cambridge University, Bristol University	437
E A Sutton	M R C S Eng, L R C P Lond	Charing Cross Hospital	402

* Received an allowance of marks as holder of an Officers' Training Corps certificate

INDIAN MEDICAL SERVICE

AT the July examination there were 28 candidates, the first 15 being admitted as lieutenants on probation. The names of the successful candidates with the marks obtained by each out of a possible total of 5,100 are given below

Name	Degrees, etc	Medical School	Marks
J W Pigeon	M R C S, L R C P, B C Cantab, B A	Cambridge University, St Bartholomew's Hospital	3,304
M L Treston	M R C S, L R C P	London Hospital	3,173
P Vieyra	M B, Ch B Edin	Edinburgh University, Rotunda, Dublin	3,141
B M Mitra	M R C S, L R C P	Calcutta Medical College, Middlesex Hospital, Coombe Hospital, Dublin	3,101
P Savage	M R C S, L R C P	Guy's Hospital, Durham University	3,071
T B Paul	L M S S A	Middlesex Hospital	3,049
A Chand	M B, B S Punjab	Lahore Medical College, University College Hospital	3,046
R Lee	M B, Ch B Liverpool	Liverpool University	3,040
N S Jatar	M R C S, L R C P L M and S Bombay	Grant Medical College, Bombay, University College Hospital	2,972
T S Sastry	M B, C M Madras	Jadras Medical College, St Bartholomew's Hospital, Middlesex Hospital	2,891

Name	Degrees, etc	Medical School	Marks
Jamil ud din	M B, Ch B Edin	Edinburgh University	2,610
F B Chenoy	M R C S, L R C P, L M and S Bombay	Grant Medical College, Bombay	2,700
S B Venugopal	M R C S, L R C P, L M and S Madras	Madras Medical College, University College, Guy's Hospital	2,697
C de C Martin	M B, Ch B Edin	Edinburgh University	2,696
J H Smith	M B, Ch B Edin	Edinburgh University	2,687

THE following I M S officers passed the examination of the London School of Tropical Medicine, July 1914 — Captain A C Munro, I M S, M B (passed with distinction and won both the Duncan and the Lalaca Medals), Capt G W Macdonachie, Capt. A C Anderson, and Lt Col B K Mitter, M S (Col), L R C P & S (Edin)

CAPTAIN M F REANY, M E, D P H., M P C S, I M S, Civil Surgeon, who has been recalled from the combined leave granted him by Order No 1233, dated the 31st May 1913, is posted to the Chanda District

ON relief by Captain M F Reaney, M E, D P H., M P C S, I R C P, I M S, 3rd grade Civil Assistant Surgeon A F W DiCosta, I M & S, Officiating Civil Surgeon, Chanda, is reposted to the charge of the Main Hospital, Chanda

MAJOR F O N MELL, M E, C M, D P H., I M S, who has been recalled from the combined leave granted him by orders Nos 435 and 968, dated the 26th February 1913 and 5th June 1914, respectively, is reposted as Superintendent, Central Jail, Nagpur

Under Section 6 of the Prisons Act, 1894, the Chief Commissioner is pleased to appoint Major F O N Mell, M E, C M, D P H., I M S, Superintendent, Central Jail, Nagpur, to the executive and medical charge of the Nagpur Central Jail

ON relief by Major F O N Mell, M B, C M, D P H., I M S 1st Class Military Assistant Surgeon R T Rodgers, Officiating Superintendent, Central Jail, Raipur, reverts to his appointment of Superintendent, Central Jail, Raipur.

UNDER Section 6 of the Prisons Act, 1894, the Chief Commissioner is pleased to appoint 1st Class Military Assistant Surgeon R T Rodgers, Superintendent, Central Jail, Raipur, to the executive and medical charge of the Raipur Central Jail

ON relief by Military Assistant Surgeon R T Rodgers, 1st Class Military Assistant Surgeon A D C Perdras, Officiating Superintendent, Central Jail, Raipur, reverts to his appointment of Civil Surgeon, Yeotmal

MISS A M. BENSON, M D, first physician, Pestanji Hormasji Cama hospital for women and children, Bombay, is granted privilege leave of absence for six weeks with effect from the 7th September 1914

MAJOR L T R HUTCHINSON, I M S, has been allowed by His Majesty's Secretary of State for India to return to duty

HIS Excellency the Governor of Bombay in Council is pleased to make the following appointments pending further orders —

Assistant-Surgeon P A Cordeiro, I M & S, to act as Civil Surgeon, Thana, and Superintendent, Lunatic Asylum, Naupada, vice Major K V Kukday, I M S

Major E F E Baines, I M S, to act as Superintendent, Central Lunatic Asylum, Yeravda, in addition to his own duties, as a temporary measure, vice Captain W D Keyworth I M S

HIS Excellency the Governor of Bombay in Council is pleased to make the following appointments —

Lieutenant Colonel J G Hoyle, M E, B Ch (Dub), I M S, on return, to resume the appointment of Surgeon, Gokuldas Tejal Native General Hospital, Bombay

Lieutenant Colonel V B Bennett, M B, B S (Lond), F R C S, I M S, on return, to resume the appointment of

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SERVICE NOTES

Civil Surgeon, Superintendent, Lunatic Asylum, and Superintendent, Medical School, Hyderabad
 Major L P Stephen, M B, R Ch (Abdn), D P H (Lond), F R C S, D T M & H (Cantab), I M S, on relief, to do duty as Civil Surgeon, Thana, and Superintendent, Lunatic Asylum, Naupura

MAJOR N R J RAINIER, M R C S, D P H, I M S, Civil Surgeon, who has been recalled from the combined leave granted him by order No 2099, dated the 16th October 1913, is posted to the Rupn District

ON relief by Major N R J Rainier, M R C S, D P H, I M S, senior grade Civil Assistant Surgeon Umicharan Ray, I M S & S, Officiating Civil Surgeon, Rupn, is reposted to the charge of the main hospital, Rupn

CAPTAIN T C RUTHERFORD, M D, M B & N S, M R C S, L R C P, I M S, Civil Surgeon, who has been recalled from the combined leave granted him by order No 452, dated the 27th February 1913, is reposted to the Bilaspur District

THE following promotions are made, subject to His Majesty's approval —

Lieutenants to be Captains, I M S

John Scott M B	} — 28th January 1914
George Selby Block, M B	
Kanwal Indrajit Singh, M B	} — 23rd April 1914.
Krishnan Gopinath Pandalai, M B	
Charles Albert Wood, M B	

THE provisional promotion of Captain H S Cormack, M B, F R C S E, published in Army Department Notification No 514, dated the 5th June 1914, is hereby cancelled

WITH reference to the Notification of the Government of India in the Home Department, No 86, dated 23rd April 1914, Major A W Greig, I M S, is confirmed in his appointment of Superintendent of a Central Jail, with effect from the 24th October 1913

THE services of Major H G Stiles Webb, I M S, are placed temporarily at the disposal of His Excellency the Commander in Chief in India, with effect from the afternoon of the 21st August 1914

THE following temporary changes were gazetted —

Assistant Surgeon Ambica Charan Datta made over charge of the Chittagong Jail to Lieutenant Colonel H S Wood, I M S, on the afternoon of 12th September 1914

Senior grade Assistant Surgeon Satish Chandra De made over charge of the Comilla Jail to Major H R Dutton, I M S, on the forenoon of 12th September 1914

Captain H A H Robson, I M S, made over charge of the Berhampore Jail to Lieutenant Colonel A H Nott, I M S, on the forenoon of 11th September 1914

Since then Lieutenant Colonel Wood, I M S, has gone back to Rajshayee, vice Major Maclewie, I M S, recalled to military duty and Lieutenant Colonel Nott has gone to Howrah, vice Major E E Waters, and Captain Peebles recalled from leave has relieved Captain Robson at Berhampore (Bengal)

MILITARY ASSISTANT SURGEON A BALDWIN D'SOUZA, Civil Surgeon, Bijapur, was granted privilege leave of absence from 15th June to 16th August 1914, both days inclusive

HIS Excellency the Governor of Bombay in Council is pleased to make the following appointments —

Major E F Gordon Tucker, M B, B S (Lond), M R C P (Lond), I M S, on return to duty to resume his appointment of Second Physician and Registrar J J Hospital, Bombay and Professor of Materia Medica and Pharmacy, Grant Medical College, Bombay

Captain J Davenport Jones, M D (Lond), I M S, on relief, to do duty as Resident Surgeon, St George's Hospital, Bombay

Major L T Rose Hutchinson, M D, B C (Cantab), D P H (Cantab), I M S, on return to duty, to resume his appointment of Professor of Physiology, Histology, and Hygiene, Grant Medical College, Bombay

Captain H S Hutchison, M B, I M S, on relief, to act as Civil Surgeon, Dhulia

Major C R Bakhle, I M S, on return to duty, to be Civil Surgeon, Sukkur

Captain M S Irani, I M S, on relief, to be Civil Surgeon, Larkana

Captain J L Lunham, M B, I M S, on return to duty, to do duty as Civil Surgeon, Surat, vice Military Assistant

Sergeon A Baldwin D'Souza reverting to his appointment of Civil Surgeon, Bijapur

HIS Excellency the Governor of Bombay in Council is pleased to appoint Captain W S J. Shaw, M B, B Ch, I M S, on return from leave, to resume his appointment of Superintendent of the Central Lunatic Asylum, Yerada

THE services of Captain F A Barker, I M S, are placed at the disposal of the Government of Madras with effect from the date of his return from the privilege leave granted to him in Punjab Government Notification No 348, dated 26th August 1914, for employment in the Jail Department in that Presidency

MAJOR J G G SWAN, I M S, made over charge of the duties of Superintendent of the District Jail at Rawalpindi to Assistant Surgeon Lal Bahadur Nath, M B, on the afternoon of the 20th August 1914

MAJOR H HALLILAY, I M S, made over charge of the duties of Superintendent of the District Jail at Lyallpur to Assistant Surgeon L P Varma on the afternoon of the 12th August 1914

ASSISTANT SURGEON L P VARMA made over charge of the duties of Superintendent of the District Jail at Lyallpur to Military Assistant Surgeon E Phillips on the afternoon of the 20th August 1914

MAJOR H ROSS, I M S, on being recalled from leave, to be Chief Plague Officer, United Provinces

MAJOR W E McKECHNIE, I M S, on being recalled from leave, to be Civil Surgeon, Etawah

LIEUTENANT COLONEL W YOUNG, I M S, Civil Surgeon, on being recalled from leave, to Cawnpore

LIEUTENANT COLONEL G T BIRDWOOD, I M S, on being recalled from leave, to be Civil Surgeon, Lucknow, and Professor of Midwifery, King George's Medical College, Lucknow

THE Hon'ble Lieutenant Colonel C MacTaggart, C I E, I M S, officiating Inspector General of Civil Hospitals, United Provinces, on being relieved by Colonel C C Manifold, C B, I M S, reverted to his substantive appointment as Inspector General of Prisons, United Provinces

THE Hon'ble Lieutenant Colonel S H Henderson, I M S, officiating Inspector General of Prisons, United Provinces, on being relieved, to revert as Superintendent, Central Prison, Aga

THE services of the undermentioned officers are replaced at the disposal of the Government of India, Army Department, with effect from the date they hand over charge —

Second Class Military Assistant Surgeon St John E. Hendricks, on Plague duty in the Nagpur District

Third Class Military Assistant Surgeon A R Emmett, Sub Divisional Medical Officer, Ellichpur

CAPTAIN M F REANEY, M B, D P H, I M S, Civil Surgeon, who was granted combined leave by Order No 1233, dated the 31st May 1913, has been granted, by His Majesty's Secretary of State for India, study leave from the 1st May to the 31st July 1914

CAPTAIN S W JONES, I M S, and Major C S Lowson, I M S respectively delivered over and received charge of the Yerada Central Prison, on the 7th September 1914, before office hours

CAPTAIN M S IRANI, I M S, AND MAJOR C R BAKHLE, I M S, respectively delivered over and received charge of the Sukkur Prison on the 11th September 1914, after office hours

THE services of the undermentioned officers are placed temporarily at the disposal of His Excellency the Commander in Chief in India —

Captain E T Harris, M B, I M S

Captain W F Bayne, M B, I M S

Captain W S McGillivray, M B, I M S

Major F P Connor, F R C S, I M S

Major N W Mackworth M B, I M S

Major S Anderson, M B, I M S

Major L Cook, M B, I M S

[Nov., 1914]

THE following Military Assistant Surgeons serving in Bombay Presidency reverted to the Military Department from the dates mentioned against their names —

1st Class Milt Asst Surgn

A E Almeida

1st Class Military Asst Surgn

A V M King

1st Class Military Asst Surgn

J H Whittenbury

1st Class Military Asst Surgn

F H D Netscher

1st Class Military Asst Surgn

J F Menezes

2nd Class Military Asst Surgn

H A Poyntz

2nd Class Military Asst Surgn

L G Scott

2nd Class Military Asst Surgn

N P Sheman

2nd Class Military Asst Surgn

L V O'B Easdon

9th Sept 1914, forenoon

7th Sept 1914, forenoon

7th Sept 1914, forenoon

7th Sept 1914, afternoon

12th Sept 1914, afternoon

9th Sept 1914, afternoon

7th Sept 1914, forenoon

10th Sept 1914, afternoon

8th Sept 1914, afternoon

CAPTAIN H A LALOND, I M S, was recalled for duty from leave and has been appointed House Surgeon, Sassoon Hospital, Poona, with effect from the forenoon of 11th September 1914.

MAJOR F H G HUTCHINSON, M B, C M, D P H, I M S, and Major H A FORBES KNAPTON, I M S, respectively delivered over and received charge of the office of the Deputy Sanitary Commissioner, Central Registration District, on 8th September 1914, before office hours.

THE following orders are notified in the *Burma Gazette* — Lieutenant-Colonel J Penny, I M S, is recalled to duty before the expiry of his leave and is appointed to be Civil Surgeon, Meiktila, in place of Major E A Walker, I M S, whose services have been replaced at the disposal of the Government of India.

Captain H S Matson, M B, I M S, is recalled to duty before the expiry of his leave and is appointed to be House Surgeon, Rangoon General Hospital, as a temporary measure.

Lieutenant Colonel T W Stewart, I M S, is recalled to duty before the expiry of his leave and is appointed to be Civil Surgeon, Toungoo, in place of Major H E Wells, M P, C M (Edin), transferred.

On relief by Lieutenant Colonel T W Stewart, I M S, Major H E Wells, M B C M (Mad) is appointed to be Civil Surgeon, Yamethin, in place of Military Assistant Surgeon G W Vincent.

Captain R D Saigol I M S, is recalled to duty before the expiry of his leave and is attached to the Rangoon General Hospital as a supernumerary as a temporary measure.

Major E R Rost, I M S, is recalled to duty before the expiry of his leave and is attached to the Rangoon General Hospital as a supernumerary as a temporary measure.

This department Notifications Nos 253, 254 and 255, dated the 27th August 1914, are hereby cancelled.

Colonel A O Evans, I M S, who was recalled to duty before the expiry of his leave, resumed charge of the office of the Inspector General of Civil Hospitals, Burma, on the forenoon of the 11th September 1914.

Major N P O'G Lalor, I M S, who was recalled to duty before the expiry of his leave, assumed charge of the duties of Deputy Sanitary Commissioner, Burma, on the afternoon of the 12th September 1914.

Major E R Rost, I M S, is transferred from supernumerary duty at the Rangoon General Hospital and is appointed to be Civil Surgeon, Rangoon (East), in place of Major A Fenton, I M S, whose services have been replaced at the disposal of the Government of India.

Captain R D Saigol, I M S, is transferred from supernumerary duty at the Rangoon General Hospital and is appointed to be Ophthalmic Surgeon General Hospital, Rangoon, in place of Lieutenant-Colonel W G Pridmore, I M S, whose services have been replaced at the disposal of the Government of India.

Captain H S Matson, I M S, is transferred from the General Hospital Rangoon, and is appointed to be Civil Surgeon, Moulmein, as a temporary measure, in place of Major J Good, I M S, whose services have been replaced at the disposal of the Government of India.

With reference to this department Notification No 264, dated the 9th September 1914, Senior Military Assistant Surgeon and Honorary Lieutenant P McCarthy was recalled to duty before the expiry of his leave.

THE services of the following officers were placed at the disposal of the Government of India in the Home Department —

Lient Col W G Pridmore, I M S

Major J Good, I M S

Major A Fenton, I M S

Major E A Walker, I M S

Captain W S Newell, I M S

THE services of Captain C H Fielding, M B, I M S, officiating Superintendent, Insein Central Jail, are replaced at the disposal of the Government of India in the Home Department.

CAPTAIN S T CRUMP, I M S, is recalled to duty before the expiry of his leave and is posted to the charge of the Insein Central Jail as a temporary measure in place of Captain C H Fielding, I M S, transferred.

LIEUTENANT COLONEL W B LANE, I M S, made over, and Lieutenant Colonel G J H Bell, C M I, M B, I M S, received, charge of the office of Inspector General of Prisons, Burma, on the 12th September 1914, forenoon.

THE services of Lieutenant-Colonel W B Lane, I M S, who was appointed in this department Notification No 116, dated the 17th July 1914, to officiate as Inspector General of Prisons, Burma, were replaced at the disposal of the Central Provinces Administration with effect from the 12th September 1914, forenoon, on which date he was relieved of his duties.

DR E H HANKIN, on being recalled from leave, resumed charge as Chemical Examiner, Government Analyst and Bacteriologist for the United Provinces and the Central Provinces, on the forenoon of the 21st September 1914.

CAPTAIN W P G WILLIAMS, I M S, on plague duty, Lucknow, to hold charge of the duties of the Chief Plague officer, United Provinces, in addition to his own duties, vice Major H Ross, I M S, reverted to military duty.

CIVIL ASSISTANT SURGEON RAI RAJENDRA NATH CHAUHURI BAIJADUR, attached to the sadar dispensary, Siharanpur, to hold civil medical charge of that district in addition to his own duties, vice Major Sumner, I M S, reverted to military duty.

CIVIL ASSISTANT SURGEON RAI GURU PRASANNA RAHA SAHIB, attached to the sadar dispensary, Bulandsahib, to hold civil medical charge of that district in addition to his own duties, vice Major Heppel, I M S, reverted to military duty.

THE services of Captain D C V Fitzgerald, I M S, are replaced at the disposal of the Government of India in the Home Department with effect from the date of relief.

THE Civil Surgeon of Ghazipuri to hold visiting medical charge of the Aramgarh district, vice Military Assistant Surgeon F W Matthews, reverted to military duty.

Notice

SCIENTIFIC Articles and Notes of interest to the Profession in India are solicited. Contributors of Original Articles will receive 25 Reprints gratis, if requested.

Communications on Editorial Matter, Articles, Letters and Books for Review should be addressed to THE EDITOR, *The Indian Medical Gazette*, c/o Messrs Thacker, Spink & Co, Calcutta.

Communications for the Publishers relating to Subscriptions, Advertisements, and Reprints should be addressed to THE PUBLISHERS, Messrs Thacker, Spink & Co, Calcutta.

Annual Subscriptions to "The Indian Medical Gazette, Rs 12, including postage, in India Rs 14, including postage, abroad.

BOOKS REPORTS, &c., RECEIVED —

Millard, the Vaccination Question II K Lewis
Kenwood Public Health Laboratory Work, 7th Ed II K Lewis
R H Elliott's Sclero Corneal Trophiphing, 2nd Ed (Butterworth & Co, Ltd, Calcutta)

Ashurst's Surgery II Kempton, 1914, Price, 8s

Watson's Gonorrhœa H Kempton Price, 16s

Fraser's Tuberculosis of Bones in Children (Edinburgh Med Series)

A & C Black, 16s net

LETTERS, COMMUNICATIONS, &c., RECEIVED FROM —

Colonel Hehir I M S, Simla, Major Hoffmann, I M S Madras, Lt-Col H Smith, I M S, Amritsar, Dr R L Sircar, Tengueh, China, Asst Surg E Millican Khan, Gorakhpur, Major F P Connor, I M S, Karachi Capt G A Gill I M S, Lahore Capt Jagoe Shaw I M S, Yeravda Capt H Acton I M S, Ottacumund Lt Col F P Maynard I M S, Simla Lt-Col E A Newman, I M S, Calcutta, Dr N Castellani, Colombo

Original Articles.

TRAINING OF SENIOR INDIAN MEDICAL SERVICE OFFICERS IN THE HOME COMMANDS.

BY COLONEL P HENIR, I M S,
Offg. Dir., Medical Services in India

UNDER the authority of India Army Order No 159 of 24th March 1913, four Indian Medical Service Officers yearly while on leave at home may be attached to one of the Commands for training. Before going on six months' leave from Burma in 1913, I applied to be one of the four. Permission was accorded, and it was an agreeable surprise to find that one receives full Indian Pay while so employed. I called at the War Office, Whitehall, and in an interview with Surgeon-General W Baptie, C. C. M. G., Deputy Director, Army Medical Service, he suggested that I should formulate a programme of the work that I proposed to carry out. I took advantage of this by embracing all that it was considered an Administrative Medical Officer of the Indian Medical Service should do in the time at my disposal and asked to be attached to the office of the Deputy Director of Medical Service of the Aldershot Command. The Aldershot Command was informed of the purpose of my coming and gave me *carte blanche* to carry out the course proposed. Throughout the whole of the Staff in the Command Offices showed me the utmost civility. The work was not severe, although an Indian Medical Service man has to do a certain amount of reading and note taking as regards the organisation and administration and work in general, but his chief employment is in going about and seeing at first hand everything that is to be seen to familiarize him with all that is going on in the army at home. He will find abundance of highly interesting things to occupy every spare moment of the month allowed. I might mention that a motor car is a very great acquisition in Aldershot to an Indian Medical Service Officer going through this course. I had no difficulty in obtaining comfortable lodgings in Osborne Road, Farnborough, within a few minutes' walk from which there is an excellent motor bus service (every half hour) passing the Aldershot Command Head quarter Offices. Incidentally, I may remark that one was living only about 150 yards from Farnborough Common on which Military Aerodromes are constructed, I had many opportunities of holding interesting conversations with officers of the Royal Flying Corps regarding their work and training.

My programme included—the acquisition of a knowledge of organisation and administration of the Home Army and especially of its Medical Services, routine work in a Deputy Director of Medical Services Office and Staff work in general, system of filing and keeping records, executive and administrative work in military hospitals, training of all ranks of the Royal Army Medical Corps in all its stages, physical training of all arms of the Army, and physical training of combatant officers, present day equipment of the soldier, sanitation of barracks and lines and the peace training in sanitation of all ranks bakery dairy slaughter house, veterinary training, all aspects of field service training including that of peace time, work in the field, mobilization of personnel and equipment of medical units, component parts of the different field, medical units, their custody checking and replenishment in peace time, utilization of mechanical transport in the evacuation of wounded etc, etc. Regarding each of these it is proposed to make a few remarks.

ORGANISATION AND ADMINISTRATION.
This requires some initial study and some knowledge of peace and war establishments, in time from the

perpetual references that have to be made to the various books on the subjects and direct inquiries in the office, one almost mechanically becomes acquainted with "all that it is necessary to know, and then contrasts it with our Indian organization and administration—in both the same principles are applied and the division is the real unit in both peace and war.

OFFICE ROUTINE.

There is practically no difference, *mutatis mutandis*, in the ordinary work carried out in the Deputy Director of Medical Services Office in Aldershot and a Divisional Assistant Director of Medical Services Office in India—the former is governed by the Home Regulations, we by the *Army Regulations, India*, and special books of Regulations for the military medical services of this country.

One very great advantage obtained was access to all the records of the various medical staff tours and medical manoeuvres and of training of the Medical Services generally—literature that can only be obtained in India with much difficulty. One noticed that what we have hitherto called "Medical Manoeuvres"—the Division "are at home designated "Manoeuvres held in the _____ Command for the training of certain Royal Army Medical Corps Units."

CENTRAL REGISTRY OFFICE

In the Aldershot Command Headquarters Offices I made my first acquaintance with the working of the Central Registry System of keeping records indexed by groups of cards. All records passing through the Command Offices are first taken to the Central Registry. A special establishment has to be maintained for this branch, but the results are completeness, certainty and convenience for reference. It appeared to me to require more attention to the details of records and more supervision than we could give it with the establishment at the disposal of one of our Divisional Offices in India.

I was greatly impressed with the method of which each branch of the Command Staff is made acquainted with every thing that appertains directly or indirectly to his particular branch. The Deputy Director of Medical Services on coming to office in the morning finds on his table references to all matters affecting the Medical Branch that have arrived during the preceding 24 hours, and can obtain the files referred to by simply sending for them. This is deserving of imitation in our Divisional Offices in India—frequently other branches dealing with subjects of interest to the Medical Branch and the latter knows nothing about them. This transmission of information is reciprocal throughout the various branches, the abstracts and references being prepared in the Central Registry Office.

MILITARY HOSPITALS AT HOME

I went over the Cambridge, Connaught and Louise Margaret Hospitals in Aldershot twice, and the Alexandra at Millbank once. No comparison can be drawn between the first two and last of these institutions and our hospitals for British troops in India. They are as near perfection as practicable, one does not know which to extol most—their organisation, equipment, work of the medical personnel and subordinate staff or the administration. They are all up to date and have a larger number of special wards and departments than our British troops hospitals in India. I was specially impressed with the work of the nursing section of the Royal Army Medical Corps and the excellence of their cuisine. The normal Staff of all departments of these hospitals is, however, considerably in excess of that we are accustomed to in our British troops hospitals in India. In one hospital there was average of 1 Medical Officer to 9 patients and in another 1 to 10. In India it is not uncommon to have only 1 Medical Officer to 40 or 50 patients or so, especially in the hot weather.

The Louise Margaret Hospital for Children is one of the finest institutions of the kind I have seen. There were about 1,200 operations performed in it in

1912 (I write from memory), and the gynaecological work carried out in it is of the highest order.

VENEREAL HOSPITAL, ROCHESTER ROAD, MILLBANK

I visited this institution on two occasions and was profoundly impressed with the excellent work that is being carried on in it. Several young Royal Army Medical Corps Officers were going through their specialist course there, and receiving instruction at first hand from one of the greatest living authorities on Syphilis, Colonel Gibbard.

Various demonstrations were carried out for my benefit-scraping of syphilitic sores for *Spirochaete pallida* and its subsequent staining by the dark ground method. Wassermann's reaction in which, one was surprised at the ease and certainty with which this carried out as compared with the more complicated methods adopted in many Laboratories in India, the continuous heat treatment of gonorrhœa, etc. Those who read Colonel Gibbard's address to the XVII International Congress of Medicine in August last will recognise that the work carried out in this Institution is probably *facile princeps*, the best of its kind in existence.

PREPARATION OF ANTI-TYPHOID VACCINE

On two occasions I attended the Pathological Department of the Royal Army Medical College, Millbank, while anti-typhoid vaccine was being prepared by Majors Comyns and Cummins, who very kindly demonstrated each stage as it progressed— inoculation of broth, standardization, disinfection, abstracting and sealing the vaccine in to the bottles in which we receive it in India. The whole process is now simplified and conducted with such accuracy under the supervision of two trained officers that absolute purity of the vaccine is guaranteed. One great improvement is the filling of the phials direct from the sterilized vaccine by air pressure, the stock bottles in which it is cultivated, thus removing the slightest possibility of contamination that used to exist in former times when it had to be pipetted. The vaccine is prepared weekly and despatched abroad.

TRAINING OF THE RANK-AND FILE, ROYAL ARMY MEDICAL CORPS.

I was very greatly impressed with the high standard of discipline in the rank-and-file of the Royal Army Medical Corps, and specially so with the remarkable intelligence of the non commissioned officers. This indicates highest efficient training. The classification of finished recruits into nursing, clerical, cooking and general duty sections is carried out with care and judgment, and after ascertaining the qualifications and natural tendencies of the particular individual, further specialization goes no later as regards "X"-Ray work, massage, etc., from the nursing section, and results in the production of experts in the special lines. In the Barrack-room Royal Army Medical Corps, Non-Commissioned Officers and men live under precisely the same conditions as those of combatant units and Royal Army Medical Corps Officers discharge very much the same duties as those of an Infantry Battalion. The *esprit de corps* in all ranks is admirable. One observed with peculiar interest the development of the Royal Army Medical Corps recruits, and it was rather astonishing to find that such smart, keen, alert and physical excellent men are being turned out of what appears to be some times of very unpromising material. They go through their ordinary recruits drill, physical training in the Command gymnasium, stretcher drill, and First Aid course, classes in theoretical and practical sanitation, nursing, cooking, etc.

PHYSICAL TRAINING OF RECRUITS AND EXERCISES OF TRAINED SOLDIERS

Recruits are not put to any severe training at once, they are fed up for a fortnight or so taken for walks and light exercises and familiarized with barrack room life. They are thoroughly overhauled on first joining the

gymnasium, then weight and measurements (chest, calves, arms, &c) are taken, and periodically re taken. Any minor defects (slight bowleggedness, knock knee, trifling curvature of spine, flat foot, etc) which were overlooked by the Recruiting Medical Officer are noted.

The recruits are formed into sections of about 25, which appears to be as much as one corporal instructor can manage to give individual attention to. The severity of each hour's exercises is gradually increased to a certain maximum and then decreased. They work according to tables of exercises, the tables being extracted from *Manual of Physical Training, 1908*. The tables for Cavalry and Artillery (I-IX), are a little more severe than for Infantry (I-XIII).

The Non-Commissioned Officer conducting the exercises are themselves good athletes and have been specially trained for their work. They are very intelligent and extremely tactful and patient with recruits, at each exercise they encourage the backward, and give a few words of praise to those who progress rapidly. While the exercise is on, everything is done briskly, when passing from one exercise to another the recruits move on the double, every effort is made to concentrate attention on the exercise in hand, they are kept alert. A certain proportion of the backward lads have to be eliminated from the others, these form separate classes. Any censure given is done in a kindly way, and such criticisms as are expressed are tempered with good feeling.

There are usually 5 or 6 classes going on in the school simultaneously, and these classes go on most part of the day. Each class covers from 1-9 or more exercises at each meeting. Each man gets individual attention throughout the exercises while the course lasts. Any peculiarity in a lad is first brought to the notice of the Sergeant-Major, then to that of the Medical Officer, each morning, who advises on any temporary modification of the course he deems necessary to meet the case. The chief causes for consulting the Medical Officer are—Disordered action of the heart, running down, flat feet, varicocele, hernia, stiffness in one or other joint, slow development of physique, etc., each of which is some disable. Pronounced flat foot is considered a lasting condition and is rather hopeless in recruits for the Infantry.

The Medical Officer is himself an expert in physical training—has gone through at least a six months' course and studied the whole Swedish system carefully and its adaptation to the requirements of the British soldier. Some of these experts have been to, and worked in Sweden. It appeared to me that to thoroughly comprehend the system requires long and careful study and practice by a military Medical Officer. Each Command at Home has one of these experts, who is now a whole time officer and is, I believe, doing most excellent work. The question as to whether there should not be specialists in physical training in the Indian Medical Service is deserving of consideration (one for the Northern and one for the Southern Army).

There is also a special training school for the Non-Commissioned Officer instructors. The Command expert stated that the standard, practical and theoretical, required from these at present is not as high as it should be, and that they should get a better grounding in physiology, anatomy and the effects of various exercises than they do. From what I saw of the work and in intelligence of these men non-commissioned officers and the knowledge they possessed of these subjects, I consider their training sufficient. It would certainly be out of place and wasteful to pour reams of highly scientific knowledge on these subjects into the brains of our Indian non-commissioned officers.

The complete course of training for Infantry Recruits includes 116 attendances of 1 hour a day for 5 days each week. There are 13 tables to be gone through as laid down in *Manual of Physical Training*. When, for want of time, the full course cannot be adopted, no attempt is made to go through the whole course, the last series

of tables we then omitted, obstacle training being finally particularly attended to.

The physical training of Cavalry and Artillery Recruits is slightly different. It comprises a series of 9 tables intended for use during a three months' course of 60 attendances, 1 hour daily for 5 days a week.

The physical exercises for trained soldiers also differ from those of recruits and are in accordance with the tables laid down in *Manual of Physical Training*, pp 39 to 45. The tables selected at any time are in accordance with the state of physical fitness of the men, progression in physical fitness and maintaining fitness, due it has been attained are the main objects aimed at.

NEW WEBBING EQUIPMENT

One had an opportunity of seeing the entire kit of the new webbing equipment of the Infantry soldier. The main points about it appear to be the uniform distribution of weight about the centre of gravity in marching the men could open their waist belt and coat. It makes the back rather hot and sweaty, but men prefer it to the bandolier equipment.

PHYSICAL TRAINING OF OFFICERS

I spent an exceedingly interesting afternoon at the Royal Military Academy, Sandhurst, and ascertained the nature and scope of the courses of physical training cadets go through, and it appeared to be very much like that of the long course carried out by the Infantry soldier. They have in addition, of course, equitation, and every possible facility for indulging in practically all out-door games. Lieutenant-Colonel Thurston, in Medical charge of Sandhurst, kindly shewed me over the excellent hospital that had just been erected. Another afternoon was spent in the Staff College, Camberley, and one was greatly impressed with the high standard of the professional education in that institution and the great opportunities afforded of working up practically any branch of military science.

SCHOOL OF ARMY SANITATION

I went over this Institution on several occasions. It is fully equipped to conduct classes in military hygiene. The subject of water supply in peace and in the field is specially attended to. Several classes are held, Royal Army Medical Corps and Indian Medical Service probationers, Lieutenants for promotion to Captains, Territorial Officers, Sanitary Sections, Regimental Sanitary Detachments, and Royal Army Medical Corps. On the whole these classes are much the same as those held by our Divisional Sanitary Officers in India, the latter, however, have greater facilities for training than classes in field sanitation.

Major C E P Fowler, RAMC, Instructor at the School, kindly demonstrated the various forms of water purifying carts—Griffiths, Slack and Burnham, and one in which cloth acted as a mechanical strainer.

Regarding the last mentioned, I was assured that the best results as regards purification of water for field service purposes were obtained by passing the water under pressure of a pump through a special kind of cloth cylinder that surrounds a long coil of wire, this removes about 90 per cent of the microbes contained in the water. This cloth and wire are placed in the water cart. It is extremely simple in construction, practical and portable. I was told that it was more efficient than either the Slack and Burnham and Griffiths water carts.

He also showed me the method of purification of water by nascent chlorine generated from KCLO₂, and dechlorination being effected by aeration through take place in the water container.

Major J F Whelan, Royal Army Medical Corps, Deputy Assistant Director of Medical Services (Sanitary), 6th (Poona) Division, has been carrying out a number of experiments in connection with this method during the last three months, and his results when published will be very interesting. Recently the Cameron Highlanders used this apparatus for purifying water on the long

march from Belgaum to Poona, and spoke very highly of it.

Our Sanitary organization in India in the field, on the line of communication, and in peace time, corresponds closely with that of the Home service, and the peace and manoeuvre training of regimental sanitary detachments and sanitary sections is carried out on the same principle.

SANITARY INSPECTION OF BARRACK-ROOMS AND LINES

This is carried out in much the same way as it is in India with the exceptions that in India we have no water carriage of sewage and in some places our water supply is from wells, which necessitate attention to latrines, night soil, incinerators or trenches, eradication of flies, and perpetual watchfulness in regard to the water supplies. The lighting of barracks at Home is much better than in India.

COMMAND BAKERI

This Branch of the Army Service Corps was a surprising experience. The work is carried on in a large two storied building built specially for the purpose. Of the rank and file employed a number are enlisted as bakers, the others are trained after enlistment. To the best of my recollection about 15,000 lbs of bread are baked daily.

There is practically no handling of the constituents, and the whole process of making the bread is carried out by electrical power. The flour from sacks is dropped into a large wooden funnel whence it finds its way to a metal chamber, water from a pipe here meets it, and the yeast is poured in by hand, and the kneading is done by a pair of large metal jacks working within the chamber. When sufficiently kneaded the chamber is opened, turned upside down, and the dough emptied into large wooden bins arranged to receive it. After resting some hours, the dough is weighed, shaped, and finally placed in the ovens. These consist of large heated chambers with rows of moveable shelves arranged in tiers one above the other, each shelf holding about 100 loaves. It is finally removed, allowed to cool in open shelves, and distributed into motor lorries. The whole process of storing the flour, raising it, supervising the preparation of the bread making, etc., goes on automatically.

Only 75 per cent of the bread required daily is made in this way, the other 25 per cent is made by hand and baked in field ovens so as to keep the bakers in training for service.

DAIRY

This is also an excellently run institution on up-to-date lines, and thoroughly well supervised.

SLAUGHTER HOUSE.

This was another revelation. The meat of the whole command is slaughtered here. The building is a large spacious block with the various sections arranged in the most up to date way. As far as one can remember about 15,000 lbs. of beef are supplied from this place several times a week. The bulls are examined by an Officer of the Army Veterinary Corps before slaughter and the beef is subsequently passed by him. The post-mortem room containing pathological specimens removed from the carcasses killed that day was most interesting, and I was much indebted to Colonel Blenkinsop, DSO, A.V.C., for his kindness in arranging for my visit to this establishment. A certain amount of fresh Australian beef and mutton is also used, and I was given to understand that a complete cold storage section was about to be introduced.

SCHOOL OF ARMY COOKERY, WELLINGTON BARRACKS, ALDERSHOT

This is an interesting institution conducted on up-to-date lines, complete theoretical and practical instruction is given to the various classes held. Officers Non Commissioned and men, and pupils may learn to prepare dishes varying from a delicate souffle to roasting a joint

for half a company Considerable attention is given to field cooking under service conditions, an area of ground adjacent to the school being used for the preparation of field kitchens and for field cooking

MECHANICAL TRANSPORT IN THE COMMAND

The work and equipment of the Mechanical Transport branches of the Army Service Corps was most interesting Practically all supplies of the Command are distributed in the Army Service Corps motor lorries, which are substantial and capable of standing rough roads. They are of two classes—3 tons and 1½ tons Arrangements exist whereby the present stock of motor lorries can be very considerably supplemented when necessary

VETERINARY HOSPITAL AND SCHOOL

Through the kindness of Colonel A. Blenkinsop, D.S.O., Army Veterinary Corps, I was enabled to go over this excellent and high class institution and acquire a general knowledge of the course of training the Army Veterinary Corps and probationers of the Royal Army Medical Corps and Indian Medical Service were put through in veterinary work, and one was led to contemplate upon the fact that the young military medical officer of to day has numerous facilities for completing his education that we of a previous generation did not possess

FIELD SERVICE TRAINING

As at home, in India we now use as our authorities for field service work *Field Service Regulations* especially, Chapter XI Part II and Royal Army

Royal Army Medical Training 1911, Chapter XV From the differences in our organisation and for other reasons we use in addition a supplement to Field Service Regulations 11, *Field Service Manual*, *Medical* the appendices of which give the details of our field medical equipments, and *Medical Manual War, India, 1912* *War Establishments* is at home a yearly publication, in India revised editions are published when necessary

I was greatly struck with the thoroughness field service training of all personnel of field medical units is carried out One Field Ambulance is taken into the field with all its equipment and personnel, the latter goes through about 10 days training, in every branch of field service work including finally, work in the field with troops There another relay of personnel is taken out and trained in the same way, and so on until all available personnel in the Command have been through this annual course This is carried out in all the five Commands as part of the annual routine of training This is followed by medical manœuvres in one of the Commands for which the personnel from several Commands are drawn

It is very desirable that a singular form of routine training in field service work should be adopted in all Divisions in our Indian Empire, and there does not appear to be any serious obstacles to it It is unnecessary to move beyond the Cantonment limits of a Head-quarter Station, and the transport required can be obtained from the local Mule Corps Hitherto there has been a difficulty of obtaining a sufficient number of Army Bearer Corps men for the dandies, with the greatly increased Army Bearer Corps Cadre, however, this obstacle no longer exists, and every Division will be able to provide the 732 Army Bearer Corps men necessary for a Field Ambulance in this country

I was out with Royal Army Medical Corps Territorials of Lancashire, who were going through their Medical training for the year 1913, and was not greatly struck with efficiency The officers of the Royal Army Medical Corps engaged in this training have very many difficulties to contend with, and one is surprised that they are, under the circumstances, able to achieve what they do with the material at their disposal

It was a source of great personal regret that I could not go out on the Medical Manœuvres of the Aldershot

Command which were fixed for the 4th to 11th of August, as I was officially connected with the *XVII International Medical Congress* held from the 6th to the 12th of August 1913 I was however, able to attend during the stages of the mobilization Medical Units in the field, these and the actual moving off to the field I found most instructive

The actual work in the field is carried out on identically the same general principles both at home and in India, and in accordance with *Field Service Regulations 2, Chapter XI, Royal Army Medical Corps Training 1911, Chapter XV*

Important changes in the personnel equipment and ambulance transport of our field ambulances have recently been introduced by the Government of India on the recommendation of a Committee appointed to revise the field medical organisation and the equipment of field medical units The work of that Committee was most thoroughly carried out down to the smallest detail, and every change instituted makes far greater simplicity and efficiency All the items in our medical and surgical boxes that are not essential at the front, such as cases of eye instruments, scales and weights, books of reference on military surgery, etc, have been eliminated and such important things as surgical dressings and bandages hitherto supplied in very small quantities have been considerably increased In the medical personnel the chief change has been the adding of an additional medical officer to a field ambulance and a clearing hospital, the senior of the five officers in each case being now the Commanding Officer of the whole without holding charge of any particular section

FIELD AMBULANCES

The field ambulance at home is for 150 patients and is in India for 100, but as there are only 3 at home and 5 in India to a division, the home organisation has accommodation for 450, and the Indian for 500 patients The field ambulance at home has 10 Medical Officers (including a Quartermaster) in India five, including the Commanding Officer, so that there are 30 Medical Officers at home in the field ambulances of a division as compared with 25 in India

The tent division of a field ambulance in India is further divisible into a light and a heavy sub division, the former being required to accompany small moveable columns as on our frontier and is self-contained for about a fortnight, it is provided with fast moving transport (mules) and contains only the essentials for such a body.

The bearer division so differently constituted at home and in India that no comparison is possible In the home service there is nothing comparable with the dandies carried by our Army Bearer Corps men, each dandy requiring six men

Excluding dandies, the normal ambulance transport stored in India is a heavy ambulance tonga drawn by bullocks, as compared with ambulance wagons drawn by horses at home In hill warfare in India without roads for wheeled transport, riding ponies or mule, or camel Rajahs, are used

A field ambulance in the home service consists of a bearer division and a tent division, each divisible into three sub divisions A, B and C The nomenclature of the component parts of the field ambulance in an Indian organization is about to conform to that of the home service—a most desirable change The splitting up of our field ambulances into four bearer sub divisions and four tent sub-divisions is for the purposes of an army in India much preferable As at home one bearer sub division and one tent sub division form a section

There has hitherto been two rather confusing differences between the bearer division at home and in India We, included in the bearer divisions the equipment required to form a dressing station, and this equipment was abstracted from the tent division, and the 21 ambulance tongas belonged to the tent division, whereas the 10 ambulance wagons of the home service belonged to the bearer division These differences are about to

be removed and our Indian organisation in these respects will assimilate those of the home service. During the recent medical manoeuvres in the 6th (Poona) Division, Royal Army Medical Corps officers found these differences most confusing. The difference in the form of transport constitutes a very marked feature between the two—the bullock ambulance tonga can carry four sitting or two lying down cases, and goes at the rate of two miles per hour, the horse wagon of the home service can carry four lying or twelve sitting up, or two lying and six sitting cases and go up to six or eight miles an hour, bullock transport imposes strict limitations as regards the time it takes to evacuate wounded from the front to the clearing hospitals.

One very important person in the field ambulance at home, is the cyclist orderly attached to A section, up to the present time we have no cyclists in our Indian field ambulances. During the recent medical manoeuvres, 6th (Poona) Division we allowed one to each field ambulance, and found him a valuable accessory to the establishment.

In general terms, it may be stated, that the actual materials used in the field ambulances are now much the same in both the home and Indian organisations, the most noteworthy difference is that there are six reserve dressing boxes in the former and none in our field ambulances, this serious omission is about to be rectified.

CLEARING HOSPITAL

Both at home and in India the clearing hospital is identical in function as regards the evacuation of sick and wounded from the front to the hospitals or ambulance trains at or near the advanced base and both are 200-bed units. In India, the equipment of a clearing hospital is, with some modifications that two field ambulances, with the personnel of one field ambulance only, the normal transport consists of 28 ambulance tongas and 32 dandies. The home clearing hospital has no ambulance transport of its own and relies on the supply train (horse wagons) from the brigade areas and the mechanical transport from the rendezvous to remove the wounded after a fight. In India we should be supplemented by returning supply carts where these were being used, but on our frontiers the normal supply transport consists of camels on which several occasions we have used ambulance *kayawaks* for conveying sick and wounded, where wheeled transport cannot be employed, its place is taking by riding ponies or mules.

ADAPTATION OF MOTOR LORRIES TO AMBULANCE PURPOSES.

Various experimental trials have been made of fitting up motor lorries for the conveyance of sick and wounded in the Aldershot Command Medical Manoeuvres, the last of which were carried out in August 1913. I had the opportunity of seeing three sets of fittings employed—

1 Lieutenant Hart, Army Service Corps apparatus

Plain steel rods with an adjustable screw in the centre for extension or extraction, capable of carrying six lying down cases, these are arranged in two tiers one above the other across the lorry, each tier taking three stretchers in the case of three ton lorries and two stretchers in the case of the 1½ ton lorries.

A set of carriers consists of four steel rods placed across the lorry, the ends of which are supported by slots in the sides of the body and are maintained in position by two pegs which project on either side of and at both ends of the rod. One pair of rods is used for each tier, the stretcher being supported in position by the handles resting on these rods, lugs on the side of the iron rods prevent any lateral movement of the stretchers. This form of improvised arrangement appeared to me better than the other two. It is light, simple, substantial, easy to adjust free from projecting parts, by means of different widths, the rods when not in use can be carried on the central ridge pole of the roof and occupy but little space.

2 Lieutenant Colonel H E R James' apparatus.

This consists of fixed wooden frames to carry six stretchers. These frame fittings are bulky, take some time to fix up, and occupy too much space when the lorry is loaded.

3 Modified Brechots' apparatus.

This consists of frames of iron tubing shaped like the head end of a bedstead, the four feet being fitted with pins which fit into slots in the floor of the lorry to keep the frame in position, it carries four lying down cases. These frames are easily adjusted and do not occupy much space when the lorry is loaded, but both the frame and the fittings are liable to indentation and to be deviated from the perpendicular when there is difficulty in adjusting the apparatus.

In any serious war the motor lorries of the Army Service Corps would be largely used in evacuating the wounded from the resupply points to railhead.

I am indebted to the Reports of Major C K Morgan, R.A.M.C., Instructor, Royal Army Medical Corps Training School, Aldershot, for the details regarding these trials of motor lorries for ambulance purposes.

AMBULANCE TRAIN.

One had the opportunity of going over a fully equipped and manned ambulance train during the mobilisation for the Aldershot Command Medical Manoeuvres of 1913, the train was complete in every respect. It was supplemented by the addition of three luggage vans, one of which was fitted up with Zavodovski's improvised apparatus (R.A.M.C. Training, 1911 paragraphs 406, 407) one with Brechots' (ibid para 352) and one with Lieutenant Colonel H E R James'. The latter consists of four blocks of wood about 1 foot long, 9 inches wide and 3 inches in thickness with a V-shaped piece cut out, the block being pinned to the upper part of the sides of the wagon. The V-shaped space receives two stout cylindrical wooden poles. A thick rope forms a series of loops passing through ring bolts fixed into the floor. The field stretchers are suspended from small rope loops held in position from the thicker ropes, the stretchers being stayed fore and aft by ropes passing through ring bolts in the floor.

I was not much impressed with these improvised apparatus and consider that the one used during the second Rawalpindi Medical Manoeuvres, 1914, greatly superior. It simply consisted of ordinary dandy cots (dandies with the tops removed) slung on the hammock hooks of the bogie vans, the process of loading and slinging being easy. Each bogie carriage takes 12 of these cots. In our new organization an ambulance train carries 50 of these cots.

STATIONARY HOSPITALS

There is little that is comparable between the present stationary hospital at home and that in India. In the former it is a 200 bed unit, with us it is a 25-bed unit, expandable to 50 beds. Our stationary hospital has practically the same equipment as 2 Sections of a field ambulance, with the medical and other personnel of only one section. At home there is no ambulance transport allotted, in India the normal ambulance transport is 9 ambulance tongas and 4 dandies. As at home they are line of communication units, and with us they are intended to act chiefly as rest stations along the line of communication for sick and wounded moving down the line from the front, and partly for the retention near the front of men expected to get well within a fortnight or so.

GENERAL HOSPITALS

The differences between our General Hospitals in India and those at home are so marked that there are no grounds for comparisons. At home it appears to be a large edition of a field ambulance, but has few arrangements for performing extensive surgical work. In India our General Hospitals must often be located remote from real civilization and be self contained,

whereas at home General Hospitals are constituted to provide but temporary medical and surgical aid until reception of the patients by some permanent institution which is usually not far away

BASE DEPOT AND MEDICAL STORES

We have now no base dépôt of medical stores in India as it is considered that the medical and surgical supplies can be obtained from the nearest peace medical store dépôt which keeps a reserve in stock, and is capable of supplying whatever is necessary in a reasonably short time

Our X-Ray Sections are now kept in General Hospitals at the base or on the lines of communication, as it is considered that such delicate apparatus should not be moved about more than is absolutely necessary, and further that the occasions on which they will be required at the front are few and far between

MOBILIZATION OF FIELD MEDICAL UNITS.

I was at once impressed with the thoroughness with which this is carried out, although in point of rapidity we in India perhaps have the advantage. At home each medical unit and the whole of the medical and other personnel to be attached to it, are all definitely arranged for, e.g., when a field ambulance or clearing hospital is to be mobilized, the whole of the records of that unit are on one file with the nominal roll of all personnel, where they are, etc., the Officer Commanding of the unit calls out the office of the Deputy Director of Medical Service, and receives this file. In it are detailed all his duties during each day of the mobilization until it is completed the duties of all other officers, such as the quarter-masters, company officer, etc., are also laid down. Everything has been thought out beforehand and every department with which the mobilizing of any unit is concerned requires no further order to carry out its share in the mobilization scheme—it plays its part automatically.

The mobilization of the medical boxes is carried out in an ideal way. They are all ready in the Medical Mobilization Stores which is in charge of the Officer Commanding the Cambridge Hospital with a quarter master acting as a sort of medical store keeper. Each field ambulance is handed over to its officer commanding, loaded up, taken to the rendezvous of field ambulances, and checked. Their medical and surgical equipment include the "medical comforts". There is a considerably larger quantity of surgical dressings in the home field ambulances than in ours; they are stored as reserve surgical dressing boxes. This deficiency is now being rectified in India.

I watched the mobilization of one field ambulance (less the medical stores). It was handed over by the Ordnance Mobilization Stores at 9.30 A.M., taken to the rendezvous in the Aldershot Royal Army Medical Corps parade ground on the G.S. Wagons, checked and re-loaded within an hour. The whole process was done as if by machinery. To gauge what this means it is necessary to state that the various boxes kept in the Ordnance Stores are stocked in accordance with their list which does not correspond with that in the Royal Army Medical Corps one, and that the final arrangement is in accordance with the latter.

PERIODICAL CHECK OF FIELD MEDICAL EQUIPMENTS

In the home service this is done in each command every three months by a committee of medical officers, in India it is done twice a year, once by the Deputy or Assistant Director of Medical Services of the Division or Independent Brigade or once by an officer selected by him. Both at home and in India, however, the Deputy or Assistant Director of Medical Services is the responsible officer as to their state of completeness and readiness for field service.

I was very much struck with the fewness and simplicity of the field service returns as compared with ours in India.

It is the intention in India to have all the field medical equipments of each division stored in one place

and not scattered in different stations, and held in charge by different departments as they used to be and are still in some stations, the only exception to this is the Supply and Transport Stores of General Hospitals. Here (in Poona) we have now all our field medical equipment in one store and during the recent medical manoeuvres, 6th (Poona) Division, we mobilized the whole divisional equipment in 10½ hours and demobilized in 4 hours.

In Aldershot the Ordnance Mobilization Stores has all the equipment of field ambulances, etc., except the actual medical and surgical boxes and medical comforts. Until lately our medical boxes were held in one place, furniture in another, tents in a third, the Supply and Transport Stores holding the rest on charge.

FOREIGN MEDICAL DELEGATES

An exceedingly interesting experience was the meeting of numerous delegates from the medical services of other countries, mostly very senior men—Austria, France, Italy, Russia, Norway, Sweden, Japan, Canada and Australia being represented from time to time. Surgeon General Robinson very thoughtfully took every opportunity of bringing me into touch with these Officers and thus enabled one to enjoy an interchange of views (they practically all spoke English).

It is impossible in an article of this kind to detail all that can be learnt by a senior Indian Medical Service Officer in a month, in the Aldershot Command, it is no exaggeration to state that one is acquiring useful knowledge every moment, living in the soldiers' atmosphere, especially the military medical atmosphere. As an Administrative Medical Officer of the Indian Medical Service working in India I feel that without it one's education and training are quite incomplete, and the advantages of it are brought home to one several times daily.

I have to thank Surgeon-General Robinson, Deputy Director of Medical Services, Aldershot Command, and all his staff for their invariable civility during the period I was working in his office. I was very specially indebted to Lieut Colonel S. Guise-Moore, Deputy Assistant Director of Medical Services, for all the trouble he took in enabling me to put my programme through, although a very busy man himself, he took great pains to give accurate and authenticated replies to the thousand and one conundrums put to him on the subject one was working up.

STUDIES IN MALARIA *

By H. STOTT, M.B.,

CAPTAIN, I.M.S.,

Surgeon to His Excellency the Governor of Madras

I

PAST AND PRESENT MALARIA IN MANDALAY.

THE present enquiry refers to observations on five distinct population groups living within the walls of Fort Dufferin, Mandalay, whose admission rates for malarial fever varied from 62 per cent to 1 per cent. An attempt is made to account for this difference.

PAST MALARIA

Mandalay has ever had a bad reputation for malaria. This it easily maintains to the present

* An enquiry into the reason for the marked difference in the fever incidence amongst the five population groups in the fort Dufferin, Mandalay, which adopted diverse antimalarial measures, but were similarly situated as regards time and locality.

YEARLY VARIATION CURVE Of malarial admissions, per 1,000 strength, amongst the Troops of
the MANDALAY GARRISON (1888) (1912)

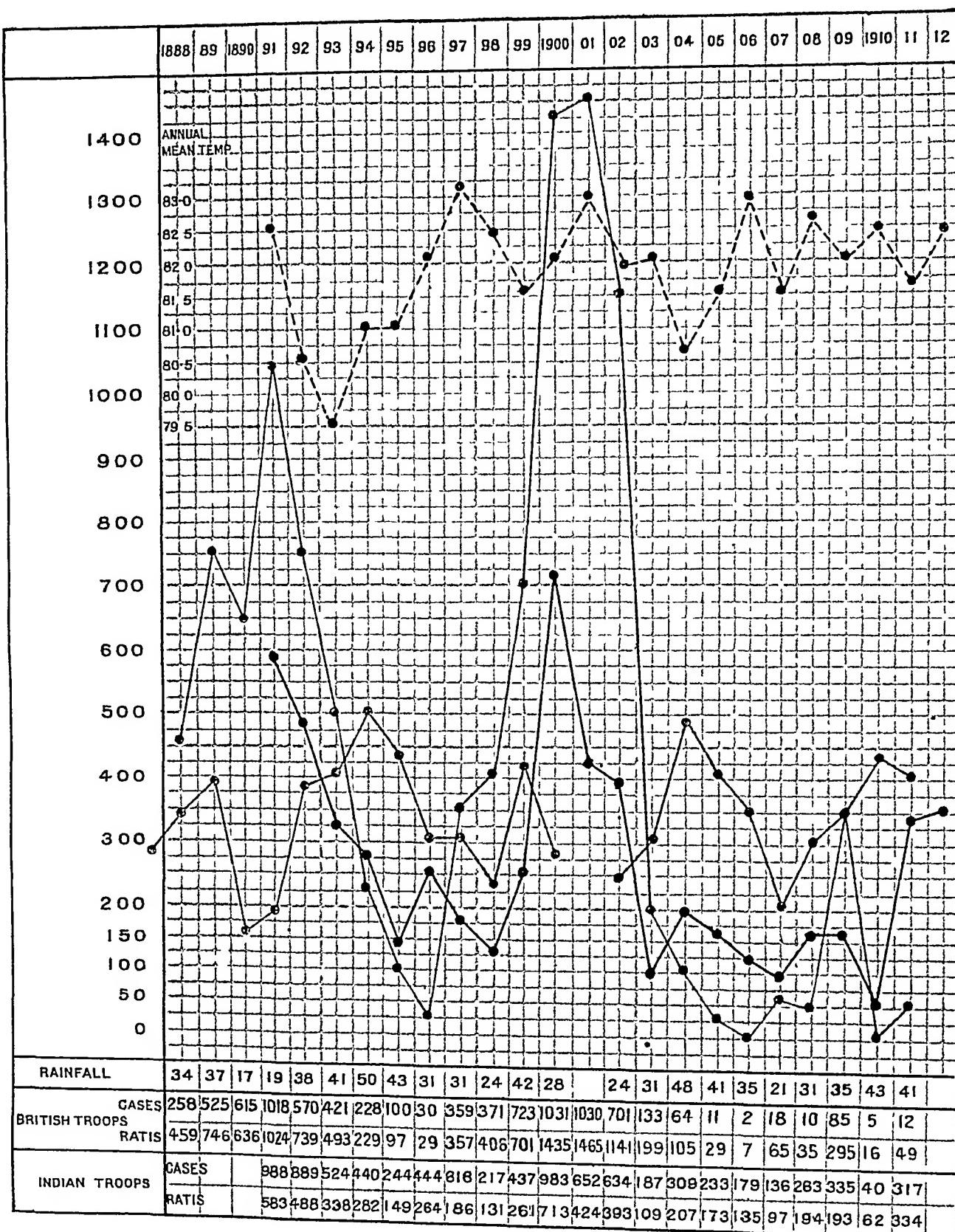
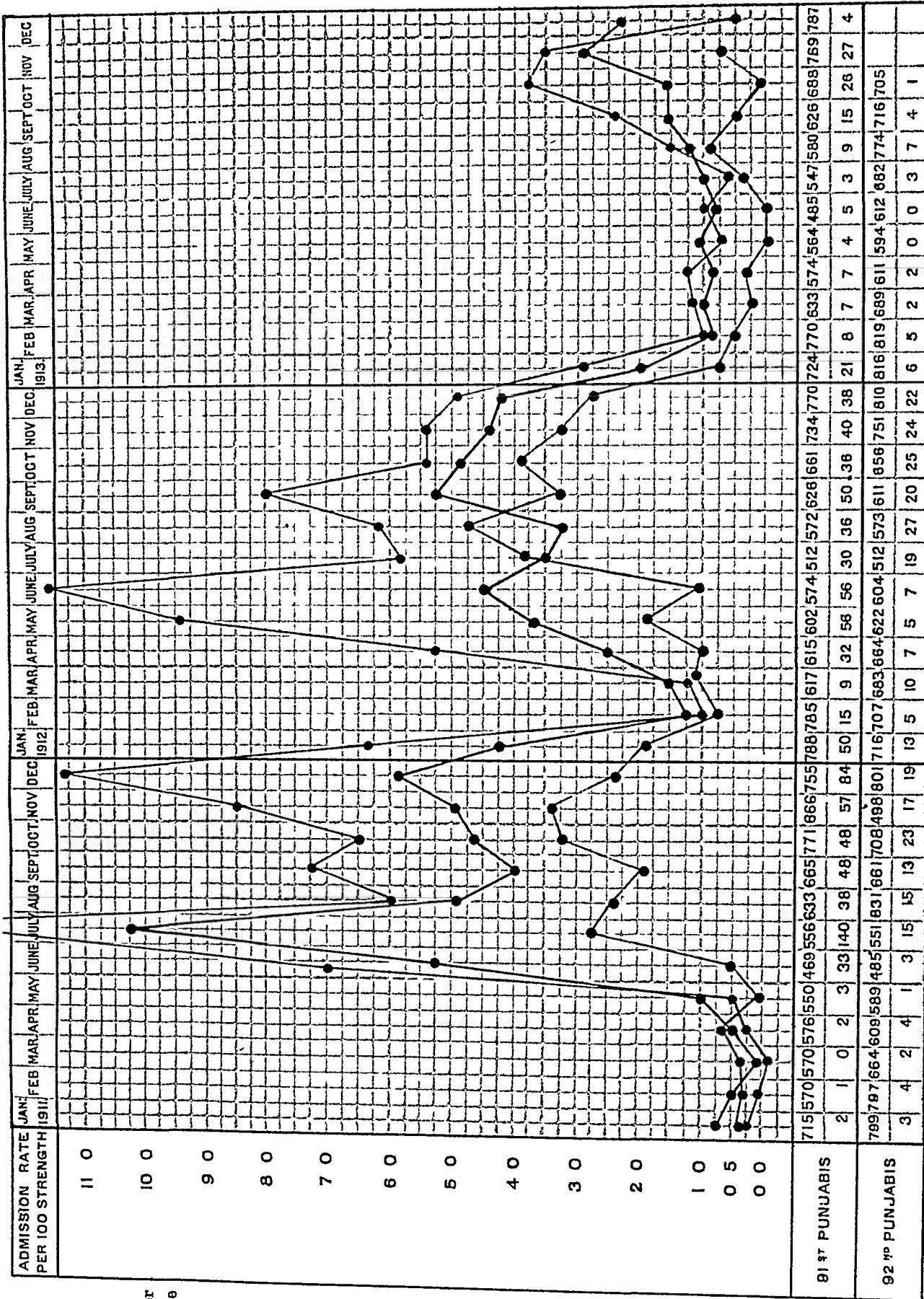


CHART I

British Troops —●—●—

Indian Troops —●—●—



ID FOR ITS COMPONENT UNITS—
 (i) 91st Punjabis
 (ii) 92nd Punjabis

MONTHLY VARIATION CURVE—
of fever (Malaria) admissions per
100 strength for all troops of the
Mandalay Garrison (black line)

91 st PUNJABIS	715	570	570	576	550	469	556	633	665	771	866	755	788	785	617	615	602	574	512	572	628	661	734	770	724	770	633	574	564	485	547	580	626	688	769	787
	2	1	0	2	3	33	140	38	48	48	57	84	50	15	9	32	56	30	36	50	38	21	8	7	7	4	5	3	9	15	26	27	4			
92 nd PUNJABIS	789	787	664	608	589	485	551	631	661	708	498	801	716	707	683	664	622	604	512	573	611	656	751	810	816	819	689	611	594	612	682	774	716	705		
	3	4	2	4	1	3	15	15	13	23	17	19	13	5	10	7	5	7	19	27	20	25	24	22	6	5	2	2	0	0	3	7	4	1		

CHART III.

Monthly Variation Curve

Of fever (malaria) admissions per 100 strength, amongst all troops of the Mandalay Garrison

Jan 1911 to Dec 1912

Showing its relation to

- (i) The mean daily dry Temperature
- (ii) The mean maximum dry Temperature
- (iii) The mean minimum dry Temperature
- (iv) The mean difference between the wet and dry bulb

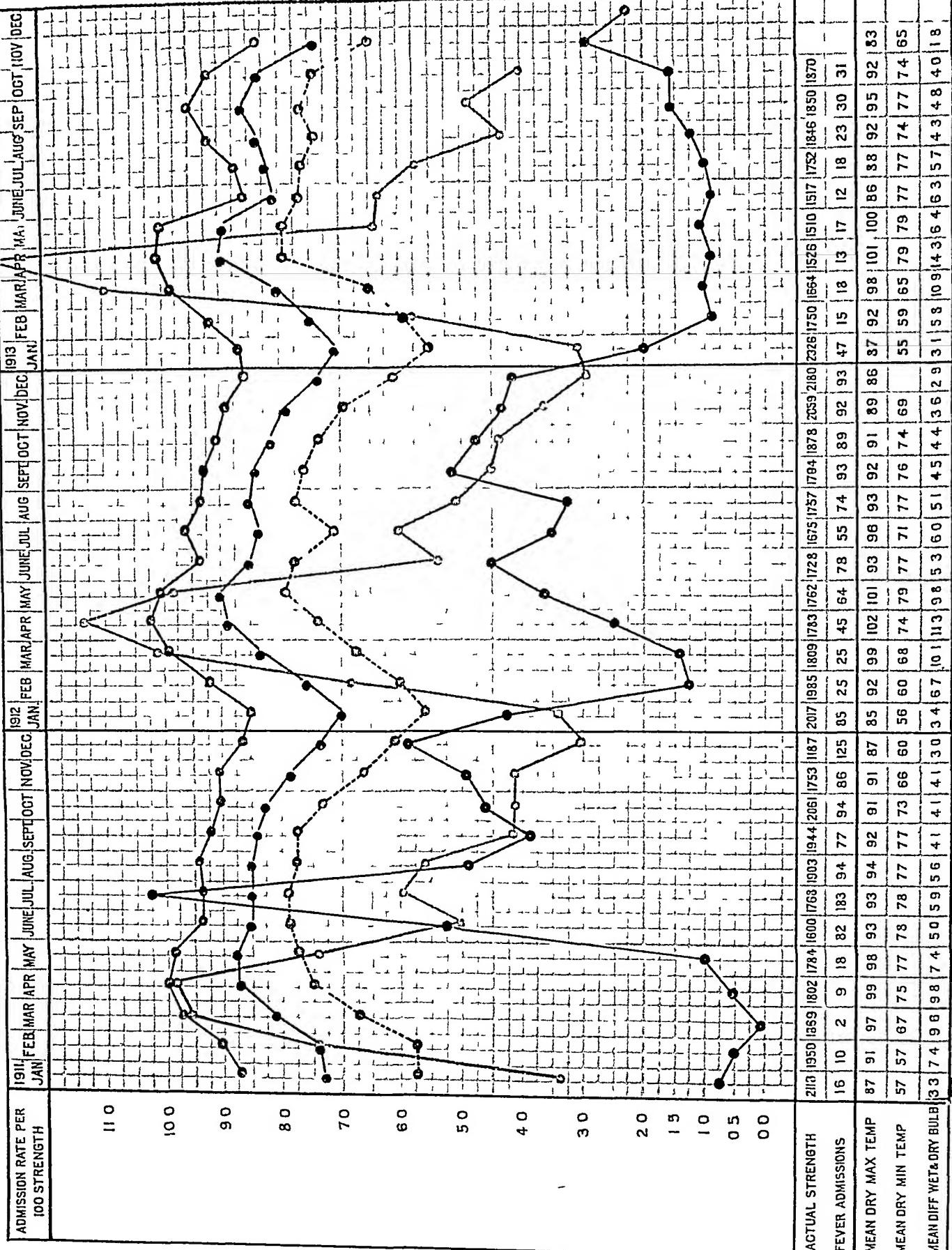
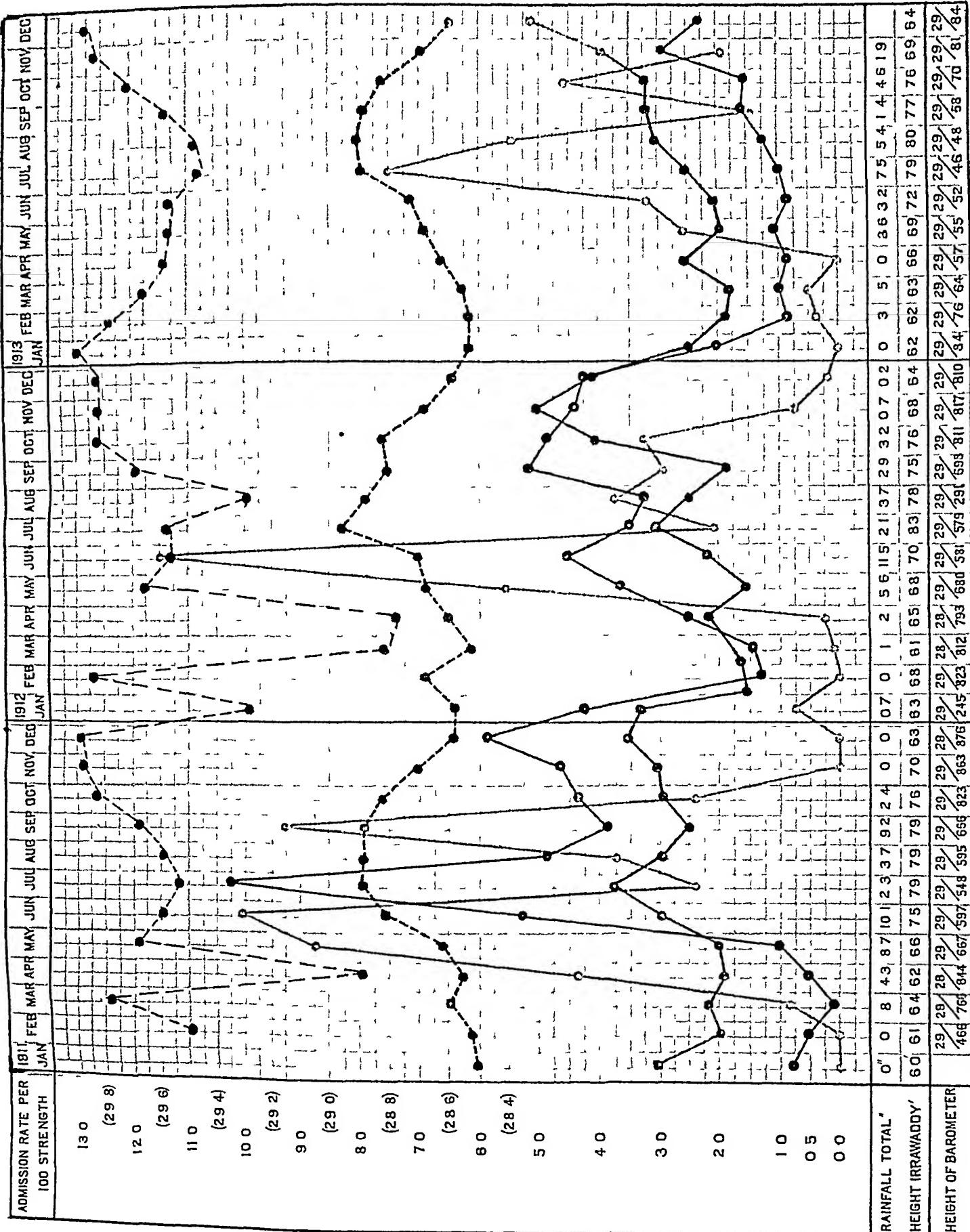


CHART IV



Monthly Variation Curve

Of fever (malarial) admissions per 100 strength, amongst all troops of the Mandalay Garrison

- (i) The Total Monthly Rainfall
 - (ii) The height of the Irrawaddy
 - (iii) The height of the Barometer

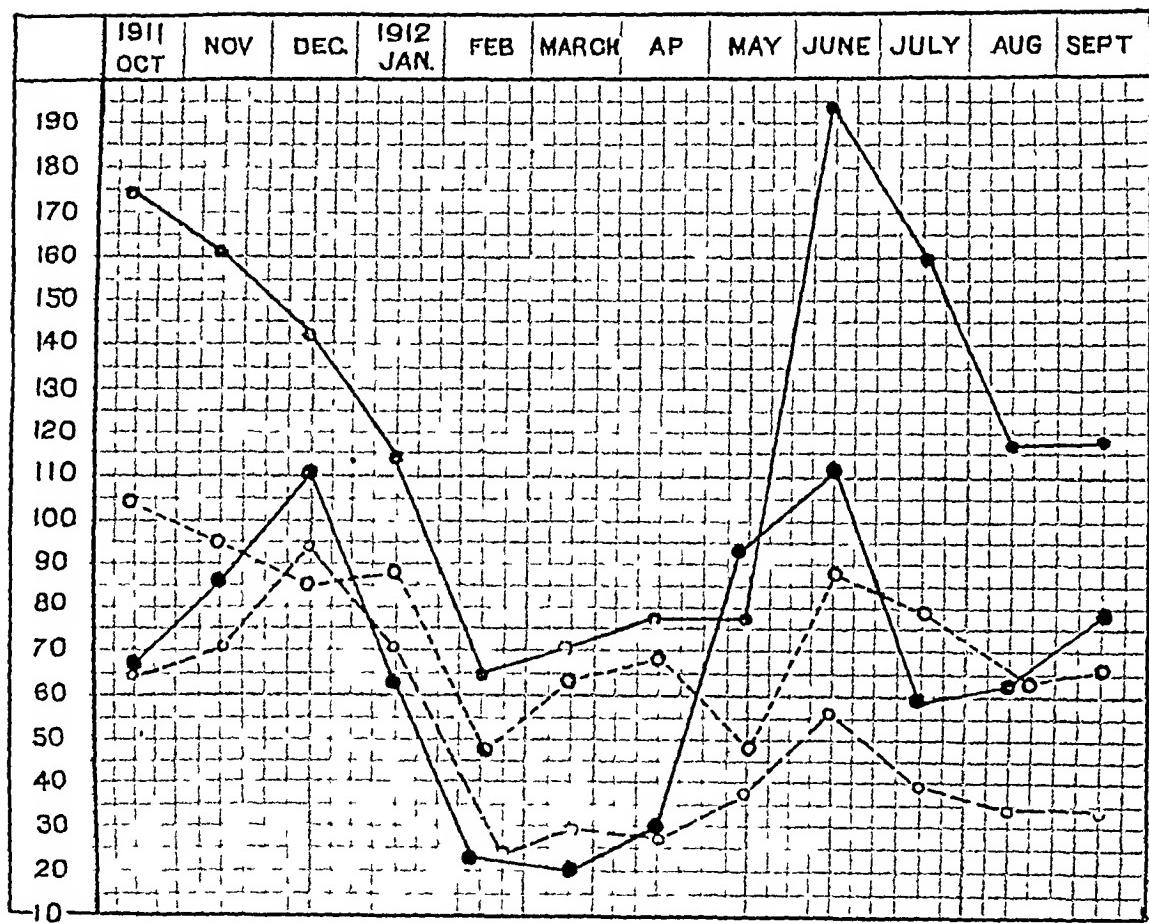


CHART VI

MONTHLY VARIATION CURVE of fever (Malarial) admissions per 100 strength, strength per month for the 91st Punjabis (continued black line) for 12 consecutive months

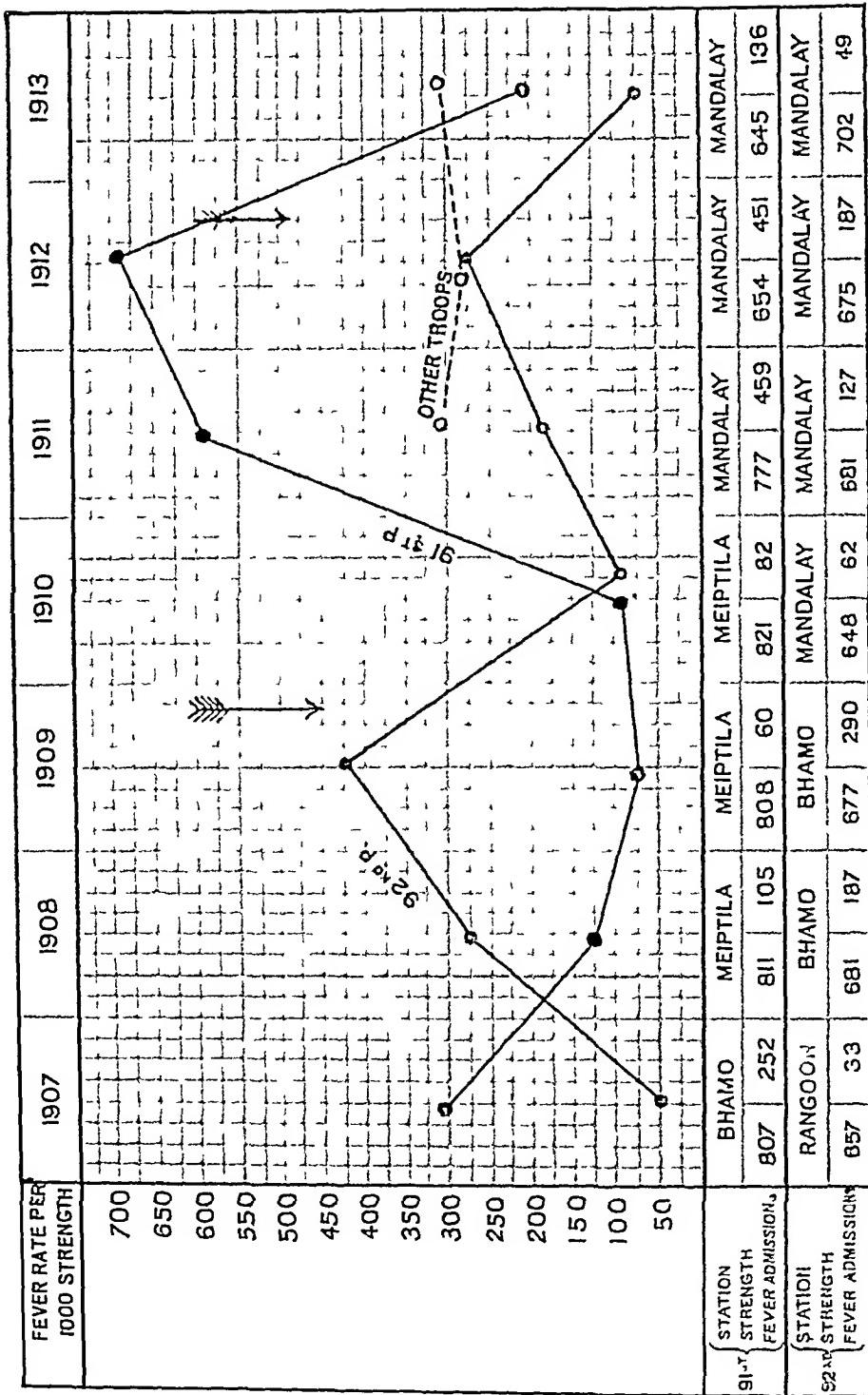
Shewing its relation to
the relative severity of attack arising during the different months, as estimated by—

- (i) the days in hospital per case,
- (ii) the fever units per case,
- (iii) the doses of quinine required per case

CHART VII

Showing the stations, fever rate and dates of adoption of mosquito-net prophylaxis by the 91st and 92nd Punjabis
 The admission curve for other troops in Mandalay (British Burma and India), who were not using supervised
 mosquito-net prophylaxis is also shown during 1911-12-13

Arrows indicate time of adoption of mosquito-curtain Red 92, Black 91



day, for military statistics still point to Fort Dufferin as the second most malacious cantonment in Burma. The surest guide to its past malarial history is the record of the malarial admissions for British and Indian troops which are available from the years 1888 and 1891 respectively. From these records chart I has been constructed. It shows the yearly variation curves for the troops quartered in Mandalay per constant strength, together with the mean annual temperature and the total annual rainfall.

Two points are at once apparent. *Firstly*, that the reputation for malaria has been earned not by a continuously high annual sick-rate, but by recurring epidemic periods, which appear to have broken out at somewhat regular ten yearly intervals rather than the irregular bouts. *Secondly*, that curves for the British and Indian troops follow a very similar general outline, but that during epidemics the former have been the chief sufferers, whilst in non-epidemic years the Indian troops have to some extent maintained their degree of infection.

To consider for a moment the first of these points in greater detail. Was it a coincidence or through some as yet unrecognized factor in the aetiology of malaria that the intervals between epidemics were periods of ten years? Very probably the former is the correct explanation, but the possibility arises that, either the occurrence of a ten-yearly immunity in man or mosquito exists, or some entirely different condition explains the apparent periodicity of the outbursts. The supposition of such an immunity in man is at once put out of court when it is remembered that the individuals were soldiers who were transferred every two or three years and replaced by fresh troops. It is difficult to produce satisfactory evidence for or against the two latter suppositions.

With regard to the aetiology of each individual epidemic, however, more certain information is available. The first epidemic period reaching its height in 1891 was probably an application of the general law that an outburst of epidemic disease will follow the immigration of a non-immune population into an endemic area of that disease. In this case the non-immune population were our troops who first entered Mandalay in 1885, whilst the disease in an endemic area was malaria in Mandalay.

An important aetiological factor in the second epidemic of 1900-01 was the flooding of the whole Fort in November 1899, due to a breach of the Irrawaddy bank. Several bridges were swept away, and a village was destroyed with the loss of seven lives. The epidemic produced an enormous sick-rate for two successive years, which especially affected the British troops, amongst whom for each strength of two men an average of three admissions from malaria per

annum were recorded. Chiefly as a result of this, most of the British troops were gradually almost entirely transferred during 1902-03 to Maymyo.

It is interesting to note that on the whole a high mean annual temperature was associated in both these epidemics with a somewhat diminished annual rainfall. These points have been emphasised by Christophers as probably being the indirect aetiological factors in the severe epidemics of the Punjab, where in any year of increased rainfall, abundant anopheline breeding places became available and the anopheline population thereby was greatly increased. Per contra, the actual year of epidemic being one of diminished rainfall, produces failure of crops and consequent poverty, want and ill-nourishment amongst the ryots who are thus predisposed to the onslaught of malarial disease. This explanation would not, however, hold in Mandalay where the affected population were troops rationed by Government. Moreover, a cursory examination of chart I will at once make clear that such meteorological conditions were not confined to the periods of epidemics and, moreover, are not so definite as to base sound deductions upon.

As regards the occurrence of epidemics and of endemic malaria in general in the municipality, the civil statistics afford no help. The percentage of 'fever' cases amongst the total out-patients attending the Civil Hospital and the annual municipal death-rate from 'fevers' have been plotted for those few years during which records are available (*i.e.*, from 1904). Uncertainty in diagnosis, however, render the former, and deaths from plague the latter, most unreliable. They are apt to mislead rather than to aid the solution of any question with regard to malaria in Mandalay and so may be well omitted from further consideration.

PRESENT MALARIA.

The third epidemic of 1911-12 (*vide* chart I) requires at first glance some elucidation. In the first place, subsequent to 1902-03, the malarial curve for British troops may be eliminated from consideration, for with the removal of the great majority of these troops from Mandalay their statistics become comparatively valueless owing to the small total strength (about 200) remaining present. In the second place, the rise in the curve for Indian troops for the epidemic year is more definite than at first appears. On detailed examination it will be found that, during 1911-12, the curve rises to nearly double the height of any attained in the previous eight years. Moreover it rises to one-half the maximum of the 1891 and 1900 epidemics. Then too assuming for the moment the ten-yearly cycle of epidemics in Mandalay, it can only be expected that, as a result of the

great advance in knowledge of general sanitation and malaria during the last decade, that the epidemic of 1911-12 would be one of greatly diminished severity.

At the height of the outbreak it was a matter of very general comment that, although their lines within Fort Dufferin adjoined one another, one Indian regiment (91st Punjabis) was far more severely affected with malaria than the other (92nd Punjabis). This general observation is at once substantiated by chart II on which is plotted out the monthly malarial admission rates for the two regiments (red lines) during the epidemic years under consideration, compared with that for the station of all troops of the garrison (black lines).

The question at once arises did the marked variation there recorded affect the other population groups within Fort Dufferin in a similar manner, and, if so, to what extent? The numerical reply to this question is set out in the two following tables.

ORIGIN OF THE PRESENT ENQUIRY

A glance at the last column of each table discloses rates varying from 1 to 68 per cent. How could this enormous variation exist amongst groups of individuals collected together within 1½ square miles and exposed to the same climatic and other external influences? Why was the rate so approximately constant in each group for both years, unless the determining factor was definite and persistent?

Three solutions to this problem would seem possible:

(i) The various groups might not be equally exposed to attacks of anophelines.

(ii) Their antimalarial immunity might vary.

(iii) They might be differently protected by the antimalarial measures adopted.

A consideration of the first possibility demands a knowledge of the epidemiology of malaria within Fort Dufferin.

Tables shewing the percentage admission rates for malaria of the five population groups of Fort Dufferin

TABLE I—1911

Group	Description	Average monthly strength	Total annual fever admissions	%
I	92nd Punjabis	681	127	18.6
II	91st Punjabis	777	459	59.0
III	Jail Prisoners	969	14	1.4
IV	Jail Warders	50	31	62.0
V	Europeans	58	16	27.5
	Troops * outside Fort	621	194	31.2

* British, Burmese Sappers, Indian Mule Corps

TABLE II—1912

Group	Description	Average monthly strength	Total annual fever admissions	%
I	92nd Punjabis	675	187	27.7
II	91st Punjabis	654	451	68.9
III	Jail Prisoners	1,085	15	1.3
IV	Jail Warders	60	18	30.0
V	Europeans	40	9	22.5
	Troops outside Fort	543	147	27.0

TABLE III—1913

Group	Description	Average monthly strength	Total annual fever admissions	%
I	92nd Punjabis	702	49	6.9
II	91st Punjabis	645	136	21.0
III	Jail Prisoners	974	28	2.8
IV	Jail Warders	50	8	16.0
V	Europeans	462	143	30.9
	Troops outside Fort			

The results of this investigation are recorded in the following chapter, whilst the remaining two possible solutions are dealt with and the whole question summarized in chapter III.

II

THE EPIDEMIOLOGY OF MALARIA WITHIN FORT DUFFERIN, MANDALAY

THE PHYSICAL AND METEOROLOGICAL CONDITIONS OF MANDALAY

(1)—Situation

Mandalay is situated on the east bank of the Irrawaddy at a height of 250 feet above sea-level. Around it flat plains sparsely under rice cultivation extend in all directions. On the east at a distance of some nine miles, the western edge of the Shan Plateau suddenly rises to a height of some 3,000 feet.

(ii)—Climate and Seasons

Mandalay lies in the moderately dry zone of Burma. Its climate is healthy, though somewhat enervating. The dry hot weather commences rather abruptly in late February or early March, and lasts until the end of May by which time the rainy season has set in to continue until October. November is muggy and drying up, whilst the cold weather includes December, January, and in part February.

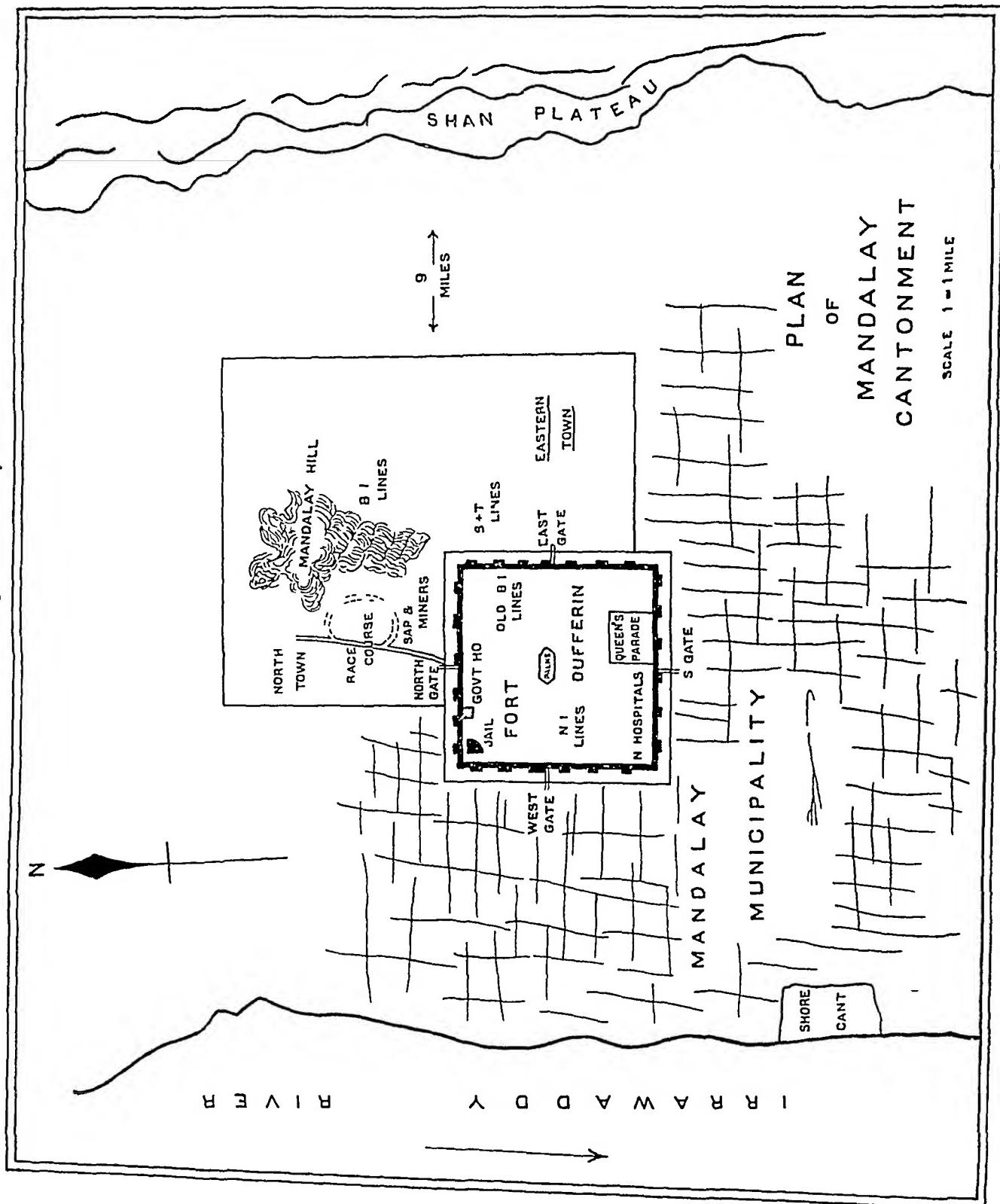
(iii)—Winds

The prevailing winds are from the north and north-west during the colder weather (November to January), and from the south, chiefly south-east, during the remaining months of the year. The cold weather northerly winds correspond to the north-east Indian monsoon, but seldom bring any Christmas rains with them. The southerly winds are an off-shoot up the Bay of Bengal of

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PLAN I—Showing the relation of Mandalay Cantonment to the Municipality.

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PHOTO 1 —A GATEWAY AND APPROACH BRIDGE, THE WALL AND LILY-COVERED MOAT OF FORT DUFFERIN
Note the water-lilies completely covering the water
(Lt Clibbon, 92nd Punjabis)

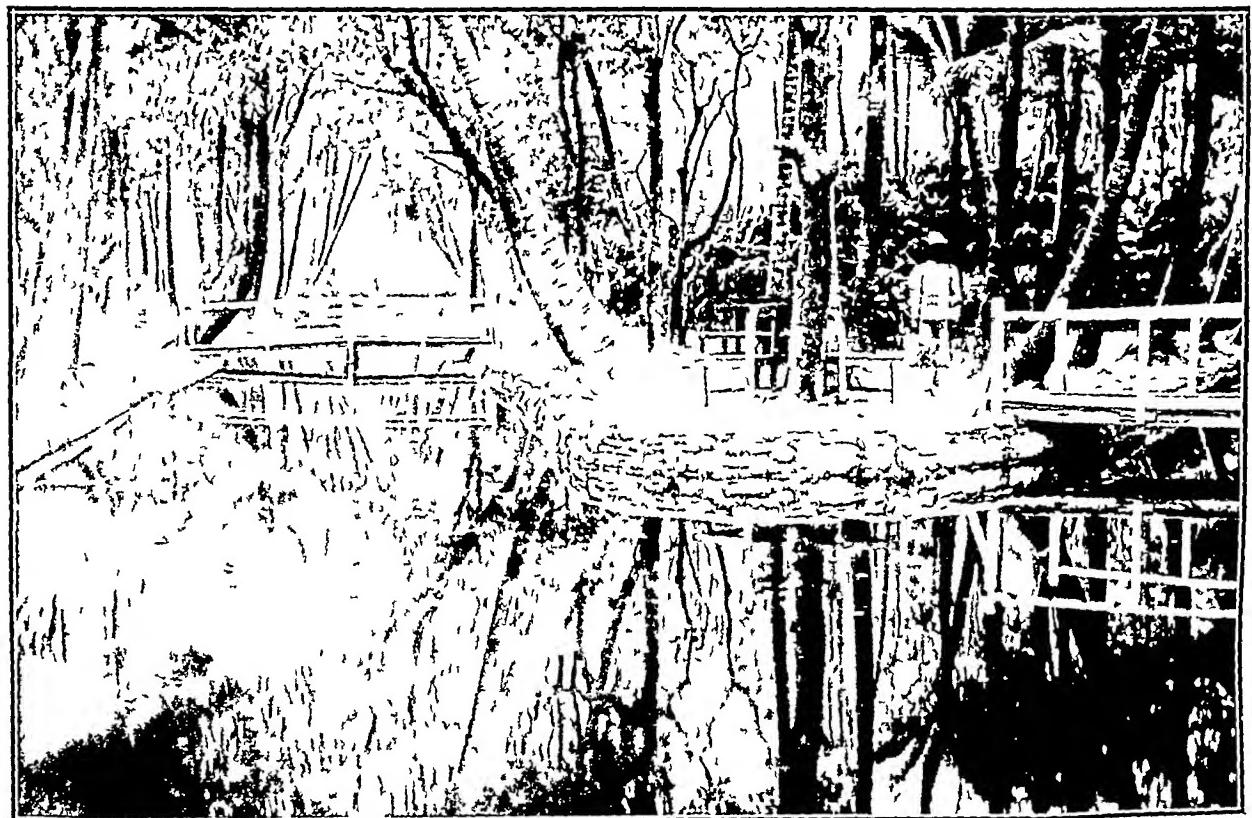


PHOTO 2—THE CHANNELS OF THE PALACE GARDENS
Shewing the pucca banks of Burmese brick lightly cemented over Practically no anophelines breed here

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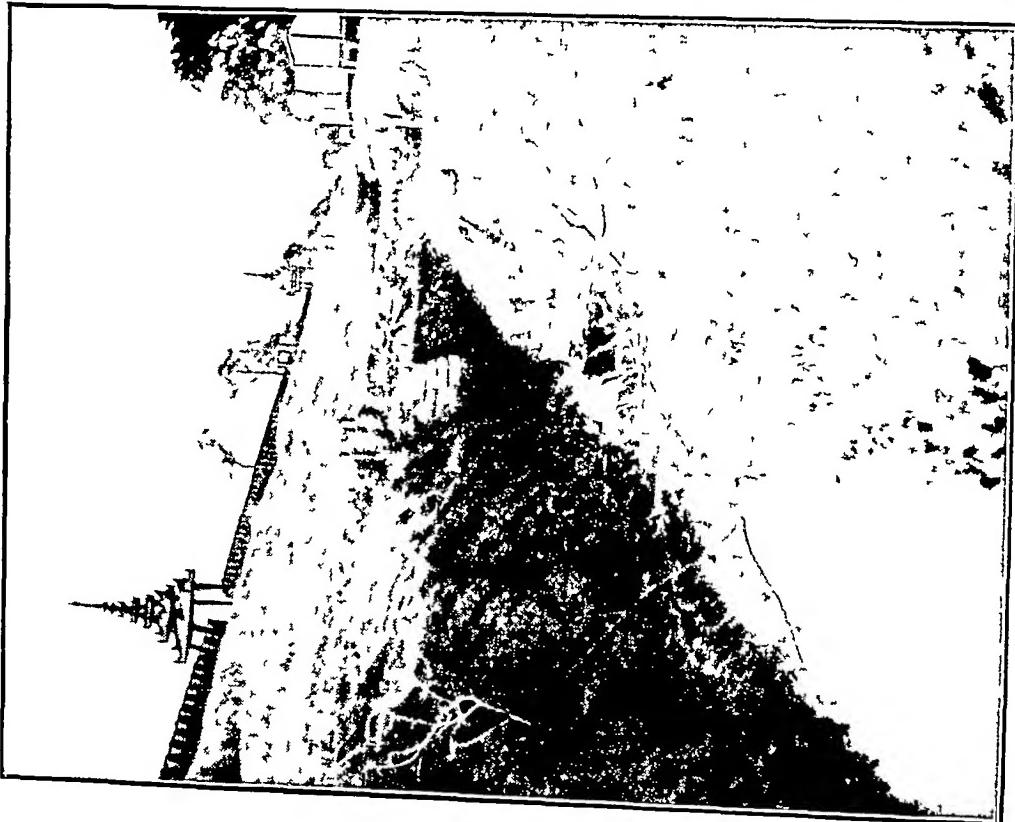


PHOTO 3—THE WEST DRYN, FOUR DURRIN
Partially, but insufficiently, ploughed
Very few anophelines breed here
(Major Wilson, 91st Punjabis)



PHOTO 1—KUTCHI DRYN FROM THE CLUB,
Southwards AND WESTWARDS
A vast anopheline breeding ground
(Major Wilson, 91st Punjabis)

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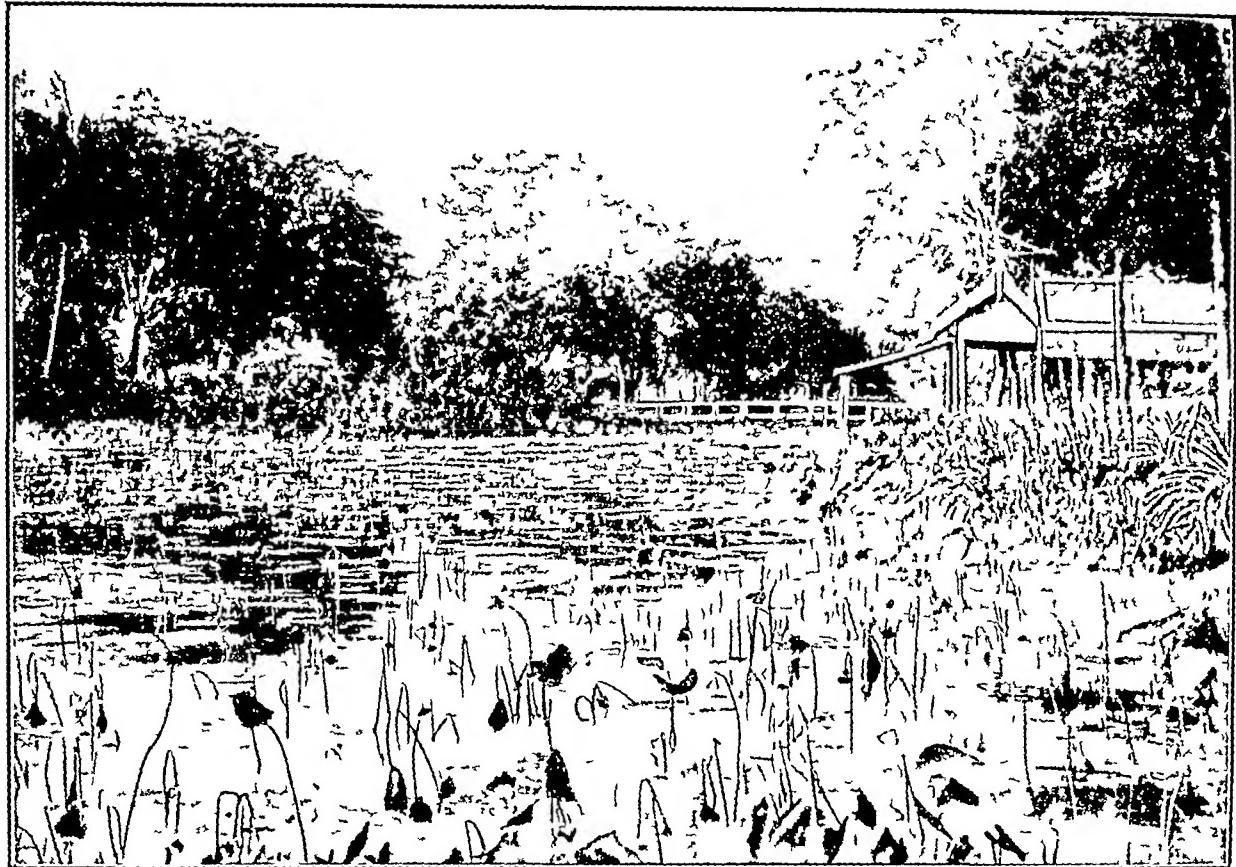


PHOTO 5—THE BACKWATER OF THE PALACE GARDENS
Shewing the thinned out lotus water-bed, the breeding ground chiefly responsible for the infection
of the N I lines



PHOTO 6—THE BACKWATER OF THE PALACE GARDENS
Shewing shelving reed-covered banks

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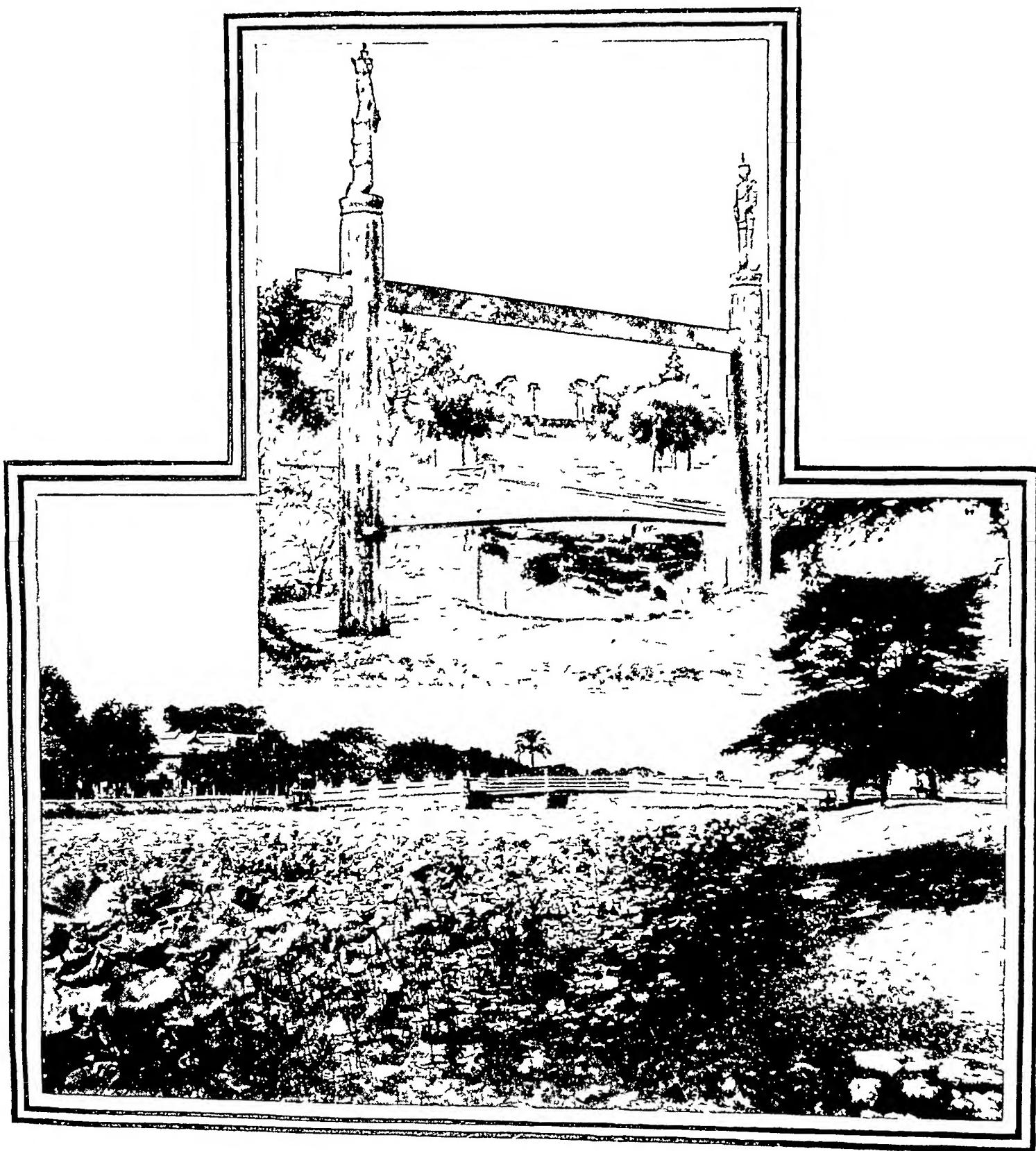


PHOTO 7—FORT DUFFERIN MOAT
Shewing the shelving banks and water thickly covered in December with the lotus plant. In consequence, this part of the Moat sheltered innumerable larvae of malaria-causing anophelines

PHOTO 10 (Inset)—WELL INSIDE THE FORT AT MANDALAY,
This was a veritable incubator of culicifacies

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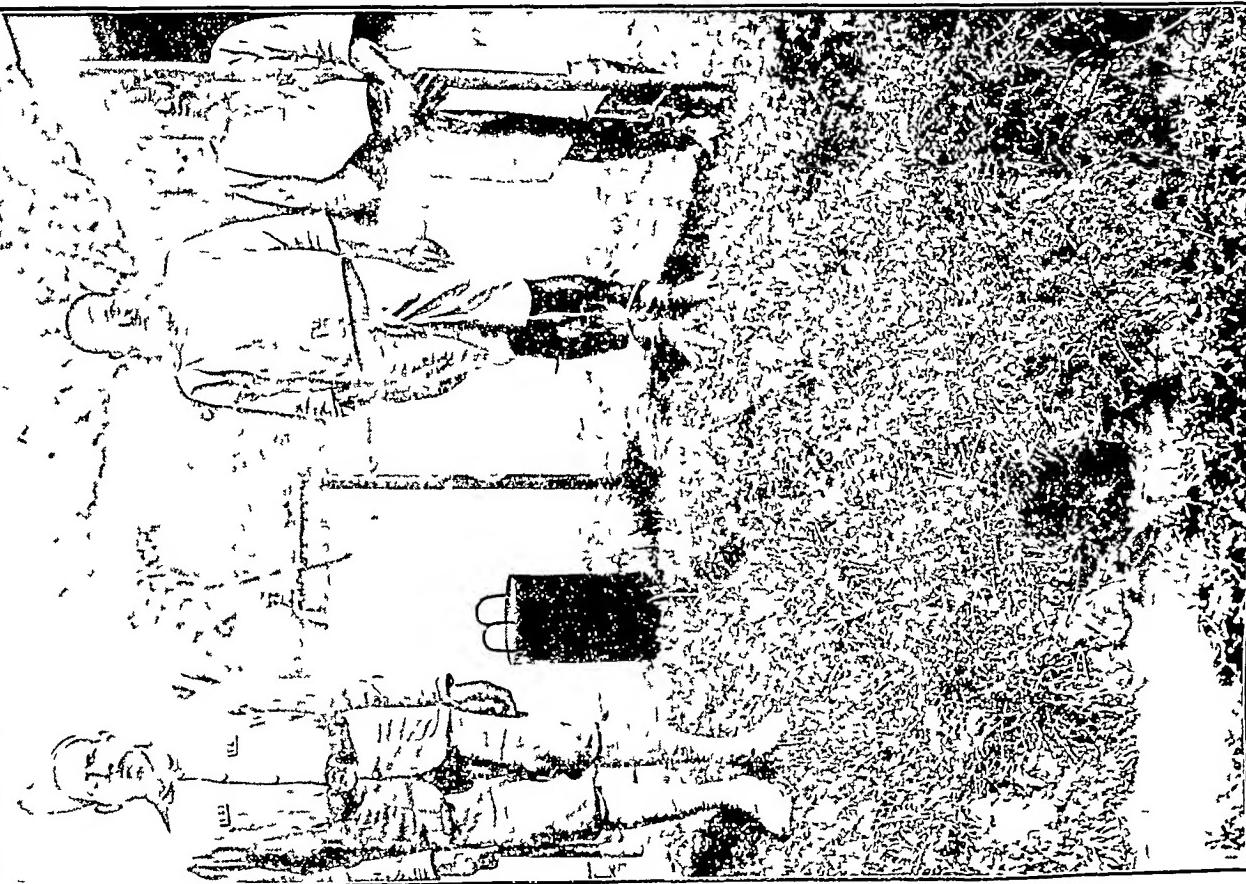


PHOTO 8—A JAIL STANDPIPE
With Krutcha blind-ending drains, giving rise to many of the stagnant
pools of Photo 9

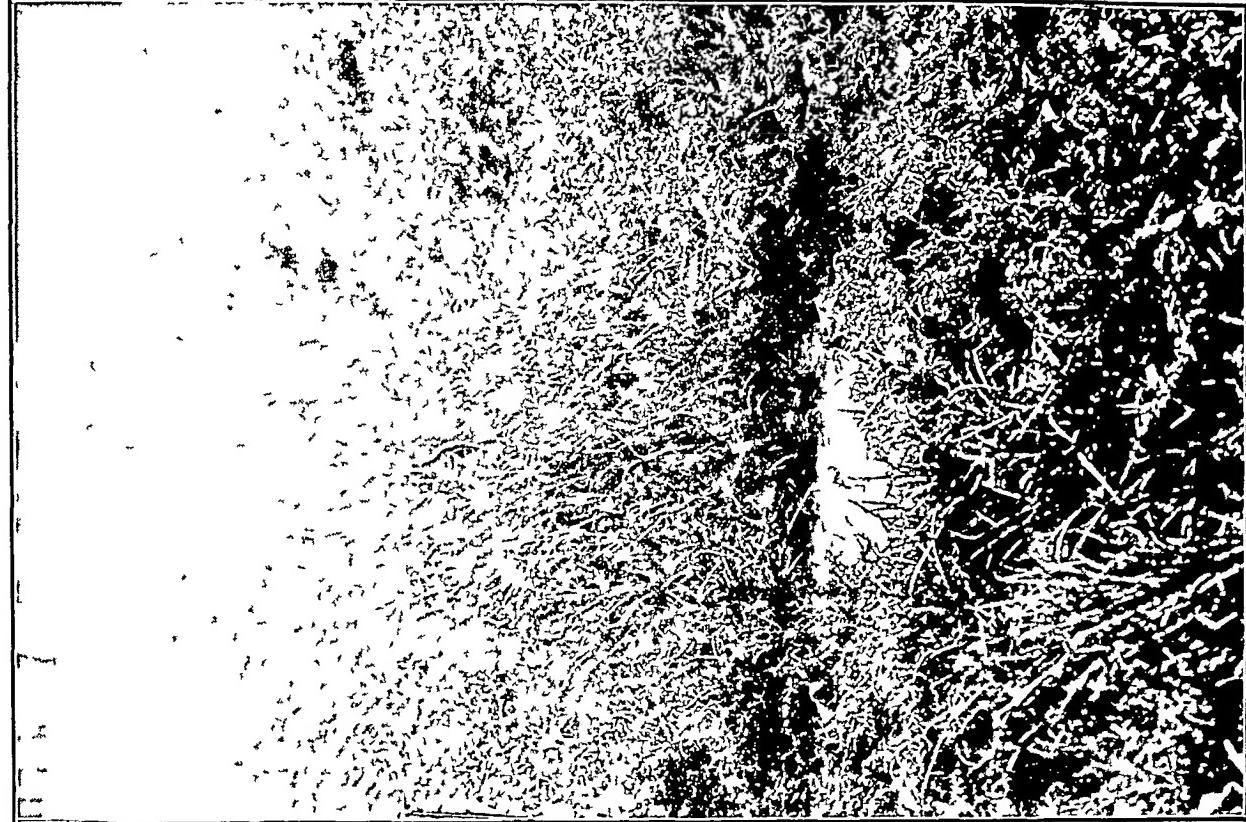


PHOTO 9—STAGNANT POOLS
Arising chiefly from Jail standpipe. The probable chief breeding
grounds affecting the Jail wards

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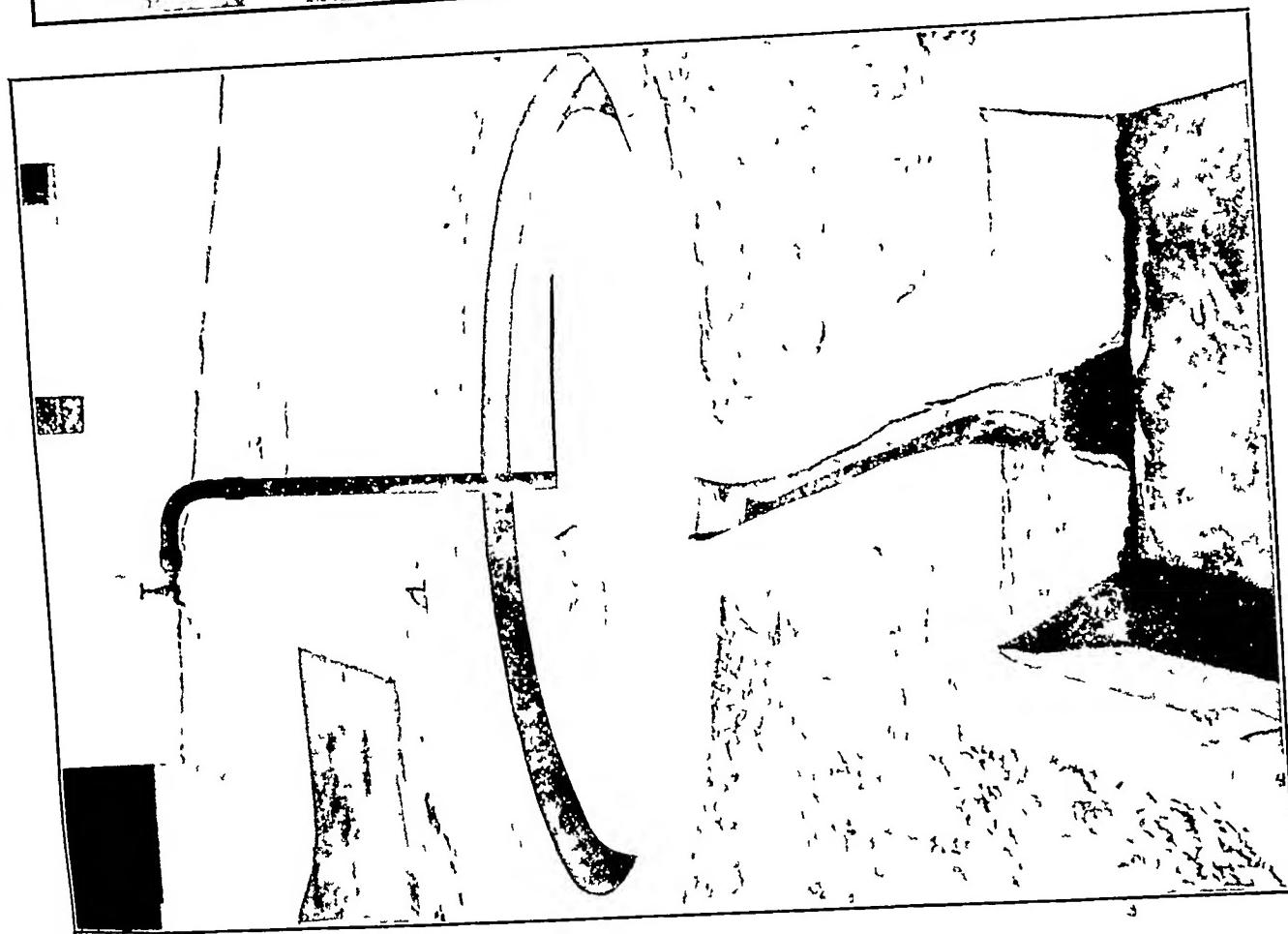


PHOTO 11.—PUCCA STANDPIPE DRAIN AND RESERVOIR
Substituted outside the Jail for the kutecha amphitheatre breeding drains (Photos 8 & 9)
and apparently resulting in a diminution of one-half in the Wards' fever rate



PHOTO 12.—WELL IN KUTCH, JAIL-DRY
Practically larva-free

the south-west Indian monsoon and provide Burma with its rainfall.

(ii)—Temperature.

The thermometer frequently rises to 105° or 107° in the shade during the hot season. The minimum in December is about 55° . The mean daily height of the dry maximum and minimum thermometer for each month of the past two years, with the mean daily dry temperature are shewn in chart III.

(v)—Rainfall

The rainfall is meagre and capricious. Up to 1908, the normal was 33", but since it has shewn a tendency to increase. Compared with other cantonments in Burma Mandalay rivals—Meiktila (32") for the lowest fall, Maymyo having a normal 59", Bhamo 73" and Rangoon 99". The early rains appear in April and May followed, when the monsoon breaks, by the pucca rain in June. After a lull in July and August the final bursts usually take place in September. Severe storms are frequent at the beginning and end of the rains. The actual monthly rainfall during the past two years is shewn in chart IV and the yearly totals in chart I.

(vi)—Atmospheric Moisture

The mean daily difference in the readings of the wet and dry bulb thermometers for each month is plotted in chart III. The difference is naturally greatest in the hot dry months of the year (February to May) less in the warm moist months during and after the rains and least in the cold months of December and January when heavy dews and early morning mists are also prevalent.

(vii)—Geological Formation

Mandalay stands to a great extent on alluvial deposit from the Irrawaddy which rests on a bed of clay. The ubiquitous black cotton soil inside the Fort is a factor of great importance in all questions of drainage. Light showers are easily readily absorbed, but once this soil is wet the water is held as might be in a saturated sponge. The soil then acts as a water-proof layer, preventing further absorption and is in addition very difficult of drainage. Moreover black cotton soil has, when wet, the unhappy property of bulging out at one point and forming hollows at another, so that the bed and banks of kutcha drains are readily upset and, if the gradient be slight, the water flow is thus easily disturbed. Mandalay Hill is of limestone formation.

(viii)—Subsoil Water-Level

Even within Fort Dufferin this fluctuates greatly, owing to the variation in the depth below the ground-level of the clay layer. In the cold weather it is on an average some 15 feet below

the ground-level, but at some points this is increased to fully 25 feet, whilst near the moat it is often only 10 feet or less. The monthly variation in the height of the Irrawaddy at Mandalay is recorded on chart IV.

INFLUENCE OF ABOVE CONDITIONS ON MALARIAL DISEASE WITHIN FORT DUFFERIN

Mandalay is certainly a favourable spot for the evolution of mosquito life. Situated very little above sea-level on a flat plain of spongy alluvial soil spread over a layer of clay the subsoil water-level must at all times tend to be high. This is perhaps further assured by the proximity on almost the same level of a large watercourse, the Irrawaddy, to which from the Shan Plateau subsoil water must gravitate. Within Fort Dufferin itself the moat and water channels all tend to maintain a high water-level and thus predispose to a moist earth surface which rapidly becomes saturated when the monsoon breaks.

The hot weather is probably not too hot and the cold weather certainly not too cold for the evolution of larval and, to some extent, of mosquito life. The former certainly appears the more deterrent of the two, probably on account of the accompanying dryness of the atmosphere which proves so destructive to the mosquito adults.

The mean temperature for each day of the year in Mandalay is practically that thought to be most favourable for the development of malarial parasites in anophelines (75° to 86° F).

The rainfall is not heavy enough to constantly flush out potential breeding places, but is sufficient to maintain that adequate amount of moisture in air and soil which is so essential for mosquito development.

For my own part I believe that the rains in Mandalay influence the endemic malaria in some such a way as the following, viz., by rendering the meteorological conditions (moisture, temperature winds, etc.) more suitable for general mosquito life and parasite development rather than by substantially adding to the already abundant breeding grounds.

This, however, from a practical standpoint is unimportant, for mosquito breeding-grounds remain and must remain our one point of attack.

The hot weather with its dry atmosphere gives way, shortly after the monsoon has broken, to milder atmospheric conditions and, at the same time, a marked rise in the malarial sick-rate is recorded. The close relation between the barometric readings, the velocity of the winds, the rainfall, the temperature, the amount of atmospheric moisture, the height of the Irrawaddy, and the malarial graph can be readily made out (vide charts III to V).

With regard to the actual malarial curve, which is plotted in thick black lines on each chart, the epidemic of July 1911 is to be noted and the

continuation of relapses therefrom throughout February and March of 1912

An attempt at differentiation into malarial (June to October) and non-malarial (January to April) seasons is evident, and the climatic conditions influencing them can be traced. It cannot, however, be too strongly insisted upon, chiefly as a result of clinical experience, that flesh infection in Mandalay can take place practically at any season of the year.

The statistical curves of the municipal "fever" death-rate and of the percentage attendance for fever amongst the out-patients of the Civil Hospital, Mandalay, are traced on chart V. They also give then support to this relative differentiation of malarial seasons. The municipal fever death-rate is most unreliable previous to 1906, in which year plague was first recognised in Mandalay. Subsequent to this all deaths from "fever" have been investigated by sub-assistant surgeons and during the years shewn have been proved to be almost entirely due to malaria.

From the clinical standpoint the graphs on chart VI record three criteria of the degree of severity of attack contracted during each month of the year, as judged by data from the malarial admissions of the 91st Punjabis. They are (1) the total days spent in hospital with, (ii) the number of degree of fever suffered per case, and (iii) the doses of quinine required to bring the temperature of each admission to normal and to maintain it thereat until discharge. The chart shews that not only were there fewer cases of malaria admitted from February to May (continuous black line) but also that the severity of each individual case treated during this period was decidedly less than one contracted during the remaining months of the year. It is also clear that from October to December, and again during June, the severity of attack was most severe. These latter months then were probably chiefly the months of primary infection or reinfection, whilst the admissions of February to May were probably in great part due to slight cases of relapse.

THE MOAT, CHANNELS, DRAINS AND RESIDENCES OF FORT DUFFERIN.

Fort Dufferin covers one and a quarter miles square and is completely surrounded by a Burmese brickwall 21 feet high in its lowest part. Entrance is effected through four gates one on each side of the square (Plan II).

Round the outer side of the walls runs a deep moat 85 yards wide with shelving grassy banks. Neither the moat nor its branch channels within the fort are ever dry, fed as they are by a slowly running stream from the irrigation canal. Both form a considerable source of water-supply to the folk near by, whilst the channels are also main-

tained as a picturesque touch in the ornamental gardens of the late Burmese dynasty.

From the entrance of the main channel at the centre of the east moat to its northern outflow under the north moat (plan II), and also in its southward course as far as the north-west corner of the club, the watercourse is more or less pucca-banked with Burmese brickwork covered in part with a thin layer of cement.

The drain along the inner side of the west wall is also partially but insufficiently pucca built.

The main continuation drain running from the club southward and westwards to its outlet in the south-west corner, with that part of the Palace garden channel marked on the plan "The Backwater," is entirely of the open kutchha variety with shelving, weedy and grassy banks. In the case of the "Backwater," the shelving banks are densely covered with tall rushes. The drains from the Lieutenant-Governor's garden in the north-west corner are likewise of this open kutchha type.

The position of the residences of the five population groups, can be easily determined on the accompanying plan. The 91st and 92nd Punjabis occupy the barracks as thereon marked, the jail prisoners that shaded portion in the north-west corner next to the Lieutenant-Governor's residence, their warders and jailors the quarters immediately to the south of the jail, whilst the European officers and officials occupy the square shaped bungalows scattered throughout the fort.

The jail is surrounded as shewn by an entire wall 16 feet high, which, however, does not include the warders and jailors' quarters.

THE ANOPHELINÆ BREEDING PLACES OF FORT DUFFERIN

During January 1912 when I examined every few yards of the watercourses about Fort Dufferin, the distribution of the anopheline larvæ was as entered on the accompanying plan II.

An attempt has been made to very roughly indicate the points of increased or diminished larval density by the number of red crosses charted. A cypher indicates an absence of larvæ at that particular spot. It will be noticed that the points of maximum density correspond roughly to four areas (The Backwater, south drain, the jail stand-pipe drains and the well), to which may be added the extra-mural moat and numerous scattered, more or less isolated, areas along the fort channels.

These latter were due to various almost insignificant local conditions which happened to favour ovi-deposition and larval development, e.g., (1) along pucca banks where vegetation had been allowed to overhang the edge, (2) where the pucca banks had been broken away and the water had overflowed to form shallow pools, (3) where mud had silted up the pucca edge to form

a fertile mud for grass and weedy growth : (4) where there was almost no flow and thick green scum had accumulated on the surface, or even occasionally in slowly moving water where only the sacred lotus plant grew.

WILD VARIETIES BRED OUT.

These five areas will now be considered and the different mosquitoes bred out enumerated. The method adopted was to catch the larvae in a cup and to breed out the adults in net covered jars. The mortality amongst the larvae was enormous and probably due to want of acquaintance with various minor points necessary for their artificial incubation.

(i) *The Moat.*

Larvae were easily caught in June and July 1912 in both eastern and western limbs. In the north stretch they were somewhat less easily found, whilst in the south moat they were very hard to find indeed (Three or four hours by one worker). This distribution was probably partly to be explained by the direction of the wind at this period of the year (due south) rendering the south moat far less sheltered than the remaining water stretches.

The type of breeding place is best shewn in photographs 1 and 7. The banks are shelving, grassy and weedy. The water has a very slight flow but quite sufficient to keep it fresh and clear. In June and July it was lotus free. The larvae were then chiefly found near the pucca bridges or the small wooden platforms which jut out from the banks at frequent intervals for water drawing purposes. At certain seasons of the year, however, the moat becomes a water-bed for the cultivation of the lotus-plant, the sale of which helps to supplement the cantonment revenue. Photograph 7, taken in December 1912, especially illustrates this condition. Round the edges of the broad lotus leaves anopheline and culicine larvae were at this time easily captured. They find here very favourable conditions for existence, the shallow water lying on and between overlapping leaves providing them with a ready place of refuge from their aerial foes above and the small larval-feeding fly below.

In July the common malaria carrier *M. culicifacies* and the harmless *N. rossi* were the chief breeders. In December, however, these species were not taken, *N. fuliginosus*, *M. sinensis*, and *M. barbirostis* had apparently entirely replaced them.

The tables below give the varieties and actual numbers of anophelines bred out from the moat water under artificial conditions in the hot and cold weather.

Date—June & July, 1912

Varieties bred out	North moat	South	East	West	Total	Percentage
1 <i>M. culicifacies</i>	5	0	11	11	32	50%
2 <i>N. rossi</i>	1	0	4	25	30	47%
3 <i>N. fuliginosus</i>	0	0	2	0	2	3%

Date—December 1912, January 1913

Varieties bred out	North moat	Percentage
<i>N. fuliginosus</i>	16	
<i>M. sinensis</i>	11	47%

(ii) *The Backwater.*

The water here is practically stationary, the chief flow of the palace garden channels being directed as shewn by the black arrows in plan II. Photographs 5 and 6 illustrate this breeding-ground.

This portion is the only part of the palace garden channels which is not pucca banked. Tall reeds and diverse grasses grow at the edges and form an extensive and much favoured breeding ground for anopheline larvae. The water surface was freely covered with algae and the smaller aquatic plants. This spot was also used as an extensive lotus garden. The subjoined table gives the actual number of varieties bred out from larvae taken in the cold weather —

Date—January and February, 1912

Varieties.	Numbers bred	Percentage
1 <i>N. fuliginosus</i>	19	
2 <i>M. sinensis</i>	5	20 per cent
3 <i>N. rossi</i>	1 (?)	4 " (?)

(iii) *The South Drain.*

This drain comprises that part flowing past the polo ground with that part which turns westward along the inside of the south wall. It forms quite a different type of breeding ground to those considered above. Swiftly flowing and clear of vegetation in the centre, the stream is spread out and shallow at either side, with a luxuriant growth of vegetation in consequence. This is well shewn in photographs 4, 14 and 15.

In this stream during June, *rossi* was the chief breeder, but *culicifacies* and *fuliginosus* were also present to a most dangerous degree when the extent of the breeding ground is taken into consideration.

The attached table records the actual numbers investigated.—

Date—May and June, 1912

Varieties	Numbers bred	Percentage
1 N rossi	61	81 per cent
2 M culicifacies	10	13 "
3 N fuliginosus	4	6 "

(iv) The Warder's and Jarler's Stand-pipe Drains

These drains collect the water from the stand pipes and conduct it away to soak in the ground wherever it may. They are of the most kutcha description, consisting in the wet weather when the subsoil water-level was high, and the black cotton soil saturated, merely of a series of more or less persistent puddles (photographs 8 and 9). These puddles were found teeming with both culex and anopheline larvae which were not unfortunately bred out.

(v) The Wells

Of the six wells inside the Fort examined in August, one in daily use contained no larvae at all, two were filled in or dry, two bred culex only, whilst one was a veritable incubator in almost pure culture of culicifacies (photograph 10). The following table presents the numbers actually bred out from this well —

Varieties	Numbers bred	Percentage
1 M culicifacies	30	97 per cent
2 N rossi	1	3 "

(vi) Mandalay Cantonment Generally

The varieties of anophelines which I have myself found in Mandalay Cantonment are —

1 M culicifacies	(May to Aug.)
2 N rossi	(May to July)
3 N fuliginosus	(Jan., Feb., May, June, July & Dec.)
4 M sinensis	(Dec., Jan & Feb.)
5 M barbirostris	(Dec & Jan)
6 Albitrostris	(Dec.)

This does not presume to be a complete list. The month attached indicates the time at which the larvae were found but does not signify that they occur solely at that period.

DOMESTIC VARIETIES AND THE MONTHLY VARIATION OF ANOPHELINES

The domestic species most commonly found, in order of frequency, are 1 N rossi, 2 M culicifacies (in the hot weather), 3 N fuliginosus.

With regard to the monthly variation of anophelines no definite investigation has been made in Mandalay. One fact, however, has been fairly definitely substantiated. The domestic

species in the hot moist months appeared to be the light brown coloured anophelines—Rossi and Culicifacies, but in the cold weather these were decidedly uncommon, whilst a black species, fuliginosus, is very freely met with.

This observation has further most interesting support from the percentages of anophelines bred out from larvae caught in the moat in the months of June and December, 1911, respectively. In the former case, the light brown anophelines culicifacies and rossi chiefly developed, whilst in the latter case, the black species fuliginosus and sinensis alone matured. If further observation supported this point, it would be of considerable interest.

DEDUCTION.

1 It is evident from the foregoing epidemiological account, that the physical, geological, and meteorological features of Mandalay are very favourable the whole year round to the development of mosquito life, provided that suitable breeding spots are available.

2 We have seen that in Fort Dufferin such breeding spots are omnipresent, both in the moat which surrounds it and in the channels which traverse it. In addition there exists the surface waterpools after the rains and also those collections of water associated with the every-day life of the population.

3 It is clear that these breeding places are taken full advantage of by the malaria carrying anophelines and that their larvae may be caught throughout the year (March & April), and that no area within the Fort can be considered out of range of flight of the adults.

CAN THESE FACTORS EXPLAIN THE DIVERSE MALARIA RATES OF THE FIVE POPULATION GROUPS?

From a consideration of the facts noted above, and a comparison of the various anopheline breeding places of Fort Dufferin with the residences of the five population groups (Plan II) it is obvious that, so far as four of these populations are concerned, there is no adequate reason from the epidemiological standpoint, for a variation in their malarial admission rates. And especially is this to be noted in connection with the adjacent Indian Infantry lines, which are chiefly infected from the same anopheline breeding ground (the Backwater), and yet whose malarial rates for 2 consecutive years show a difference of 41 per cent. The case of the fifth group (the jail prisoners) will be considered in detail later.

III

MOSQUITO PREVENTION VERSUS PROPHYLACTIC QUININE

It has been seen from the above account of the epidemiology of malaria within Fort Dufferin that the distribution of anopheline breeding

places cannot account for the diverse admission rates of the respective population groups.

POSSIBILITY OF AN ACQUIRED OR NATURAL ANTIMALARIAL IMMUNITY AMONGST THE GROUPS.

The next point for consideration is whether there exists amongst the groups a sufficient antimalarial immunity to explain the discrepancy. And here at once we fall to some extent upon unsound and hypothetical ground, for the very existence of such an immunity is unsubstantiated, and, indeed, is decidedly doubtful. Granted for the moment that such exists from analogy this immunity would be either natural or acquired.

As regards the former, it will be observed that the nationality of the population groups widely differed. Three were Indian (both regiments and the jail warders), one was Burman (jail prisoners), and one was British. There is no evidence to indicate that these races differ in their susceptibility to malarial infection. Moreover the three Indian groups themselves show a marked divergence in their malarial case incidence, though composed approximately of the same type and caste of men (Punjabi Mussalmans and Sikhs). This divergence would still require explanation. As regards acquired immunity there is more to be said. The 91st Punjabis came to Mandalay from a non-malarious station, and would thus certainly seem more predisposed to epidemic malaria than the 92nd who had perchance developed some partial immunity during their two bad seasons in Bhamo. This might indeed be thought to some extent to explain the divergent ratios of the two regiments. But certainly not altogether, for the jail warders who should furnish some stable indication of the local disease rate, suffered themselves even more severely than did the 91st during the epidemic. There must be, then, some other more important factor than the susceptibility to infection of the groups concerned, to account for this phenomenon.

THE ANTIMALARIAL MEASURES ADOPTED BY THE DIFFERENT GROUPS

The last possible solution, which deals with various antimalarial measures adopted by the groups, must therefore be examined in some detail. For this purpose it will be convenient to consider firstly the two Punjabi regiments together, then the jail prisoners with their warders, and, lastly, the scattered European group.

(1) *The 91st and 92nd Punjabis*

To be in a position to attempt rightly to appreciate a difference of 40 per cent in the fever admission rates of these two units we must be acquainted with their past malarial history. Chart VII sets out the stations and the fever rates for both Regiments from 1907 to 1913.

To follow the 91st (black curve) first. It will be noticed that, after leaving Bhamo in 1907, the Regiment was stationed for the next three years in Meiktila, a practically non-malarious spot. Early in 1911, the Regiment moved to Mandalay, the second most malarious station in Burma, where in July a month after the rains had broken, malaria attacked them severely. That the 1911 cases were chiefly flesh infections was proved by the absence of signs of chronic infection amongst the sepoys themselves. At an inspection held in September, subsequent to the first outburst of the epidemic, of 686 men only 26 (4%) were found with palpable spleens. None of these reached lower than two-finger breadths below the costal margin, and moreover 23 of these 26 cases had been in the Mandalay Hospital with fever immediately previous to the census. Of 38 adult regimental followers, none had palpable spleens. The regimental children (56 in all) were interesting, in that seven 12.5 per cent were noted with slightly enlarged but easily palpable spleens, whilst six 11.5 per cent were harbouring parasites in their peripheral blood. The close relation between these two rates is perhaps an indication of an acute rather than chronic infection of the children.

Now the 91st relied entirely for their protection from malaria on prophylactic quinine. During 1911 it was given with moderate supervision and care in ten grain fluid doses twice weekly from 22nd June 1912, and increased to fifteen grains thrice weekly from 25th July 1912. From 2nd October 1911, companies B, D., F., and H. ceased to take quinine, whilst the remaining companies continued to do so, agreeable to an investigation described elsewhere. The epidemic then shewed no appearance of being influenced by this issue of prophylactic quinine. But this cannot be asserted as a fact, for there was no comparative control.

Let us now follow the 92nd curve in red ink on the chart. After leaving Rangoon where there was very little malaria in 1907, the Regiment went to Bhamo, the most malarious military station in Burma. There they were severely attacked with fever, so much so that in July 1909 on the advice of their medical officer, the officer commanding ordered every sepoy to provide himself with a mulmul mosquito proof curtain, and in future that every recruit on joining should obtain a curtain as part of his equipment. These were and are now used every night. It is the duty of the native officer and non-commissioned officers on night-rounds to note that the curtains are in regular and proper use and good repair. The outcome of this wise order is clearly shewn on the chart, for on moving to Mandalay at the end of 1909 their fever rate fell to a comparatively insignificant level, which they were

able to maintain during the following epidemic year which proved so disastrous to their curtainless but quinined neighbours

The 92nd Punjabis were also taking ten grains of fluid prophylactic quinine from 2nd June until December 1911. The opinion of the British officers of the regiment and of their medical officer was that in Mandalay the regiment owed its immunity to malaria to their careful use of mosquito curtains, an opinion which I can myself support

(2) Prisoners and Warders

Let us now turn our attention to the jail population in the north-west corner of the Fort where the fever admission rate amongst warders and jailers is some 45 times greater than that amongst prisoners although both live within two hundred yards of each other

Why was this?

The jail prisoners did not take one grain of prophylactic quinine during 1911 nor did they use mosquito nets—such precautions were indeed unnecessary for the jail stands as an example of a mosquito free area. Within there is not a single breeding place to be found, pucca paths, pucca drains and perfect sanitation there hold sway, whilst, from without, mosquito immigration is apparently perfectly prevented by the jail wall 16 feet high

Amongst the warders, only five out of 50 were said to attempt to use mosquito curtains, but a supervised issue of prophylactic quinine was given to all. This was, however, commenced *somewhat late* in the season and not until malaria had already appeared amongst them

In the north-west corner of the Fort then we have two concrete populations, the one living in a mosquito proof area—practically malaria free, the other within a few yards of them, but outside this area, with anophelines breeding at their very doors, practically curtainless, but taking prophylactic quinine and suffering from continued paludal infection

(3) Europeans

The percentage of Europeans who suffered from fever within the Fort is worked out as accurately as the experience of Staff Surgeon and regimental medical officer is able to furnish. It is perhaps somewhat overestimated. Of the attacks several were slight cases of relapses whilst a few were fresh infections contracted while on shooting trips, the remainder being acquired locally

No definite system of malaria prophylaxis was practised. Many officers at times used mosquito nets, a few correctly but still fewer persistently throughout the year. Surprisingly often the nets were riddled with small holes, one I distinctly remember had amongst others an enormous rent which served as a door

No officer that I was aware of took regular prophylactic quinine. Two families which adopted complete mosquito net protection and did not take any prophylactic quinine to my knowledge escaped malarial infection

On the whole, it is not surprising that the fever rate amongst Europeans who adopted such irregular and incomplete prophylaxis was so high. Indeed but for the general conditions under which officers and their families live, which place them in more favourable circumstances than the sepoy, their fever rate would probably have been far higher

The southern half of the fort provides a notoriously higher percentage of fever cases than the northern half. The reason for this is at once apparent on reference to the plan of the anopheline breeding places of Fort Dufferin.

DEDUCTIONS.

To summarise the above, we may draw the following deductions—

(1) Within a definitely confined area of one and a quarter miles square, the total abolition of mosquito breeding grounds in one small area and the prevention of mosquito immigration thereto, entirely protected one population group (the prisoners) from fresh malarial infection

(2) Amongst the two groups (91st Punjabis and jail warders) who relied during 1911 on supervised prophylactic quinine, considerably over half (60 per cent) were admitted with malarial fever.

(3) Whilst another group (92nd Punjabis) which took supervised prophylactic quinine, but in addition thereto relied on a supervised system of mosquito net prophylaxis, reduced this admission rate by over two-thirds to 18 per cent

(4) Anti-larval measures against the responsible breeding grounds in the Fort caused a reduction of the 92nd Punjabis rate in 1913 to 7 per cent and that of the jail warders to 16 per cent. Along with these measures the adoption of a supervised system of mosquito net prophylaxis in the 91st Punjabis reduced their rate by nearly two-thirds to 21 per cent

(5) The admission rate amongst the troops and followers outside the Fort, amongst whom no special campaign was conducted remained approximately constant for the three years at 30 per cent per annum

(6) Amongst the European population attempts at personal prophylaxis were so irregular as to render them from the collective stand point worthless. The following important conclusions may be deduced from these figures of three years antimarial prophylaxis in Mandalay—namely, that the abolition of mosquito breeding grounds with a prevention of mosquito immigration, or prophylaxis by mosquito nets and anti-larval measures proved a fair better mode of

preventing malarial fever than the exhibition of a carefully supervised issue of prophylactic quinine

COMPARISON OF 1912 RATES WITH THOSE FOR 1911

A comparison of the admission rates for malaria from the 5 groups within Fort Dufferin for these two years does not shew any very obvious relative variation

In spite of the more general care and supervision taken with regard to the treatment and prophylaxis of malaria the admission rates in the two regiments each increased by some 9 per cent in 1912. This probably marked a continuation of the general epidemic within Fort Dufferin during the year. The jail prisoners had practically the same number of admissions as in 1911 which probably represents the approximate normal percentage of relapse cases amongst them. On the other hand, the rate amongst the prison warders and jailers fell from 62 per cent to 30 per cent. This was probably due to the marked improvement in the antimalarial sanitation of their lines resulting during 1912 in the abolition of the main anopheline breeding grounds near by. The puddles and kutchha drains already noticed (photos 8 and 9) were before the rains had set in entirely abolished, and pucca stands, drains and reservoirs substituted (photo 11). The remaining jail drains are properly kept and practically larval free (photo 12). It may be noticed that in 1912 the one group which could, and did, easily and economically considerably reduce the anopheline breeding power of its lines, reduced at the same time its malarial rate by over one half.

The European fever rate remained about the same

The persistency of a variation of 40 per cent in the malarial admission rates from the two Native Infantry Regiments during 1912 thus serves to emphasize that some definite responsible factor must exist for its explanation.

As a direct result of this conclusion and in view of the observations recorded above, mosquito nets were brought into general use by the 91st Punjabis towards the end (November) of 1912 for every individual sepoy in the regiment. Attention given to those extensive breeding grounds in the "Backwater" considered responsible for the infection of the native infantry lines was inadequate as it probably checked the spread of the epidemic equally in both regiments to the limits actually obtained. Much however could not be done on account of the expense involved.

COMPARISON OF 1913 RATES WITH THOSE FOR 1912

In 1913, the result of the adoption of mosquito net prophylaxis by the 91st Punjabis is at once shewn by a glance at charts II and VII,

the fall in their infection rate from 68·9 per cent. to 21 per cent. is most marked. The value of anti-larval measures in the "Backwater" as a factor in this reduction must not altogether be neglected, for the rate of the 92nd Punjabis who left the station on 18th December on transfer also fell to 6·9 per cent. As regards meteorological conditions the rainfall was decidedly below the average, but neither this nor a gradual dying out of the epidemic can be argued in favour of the decreased rates, for the case incidence amongst the other units of the station living outside the Fort (British Troops, Burmese Sappers and Indian Followers) had each risen during the year (Appendix B. and C). The water amongst jail warders again decreased by one-half for reasons already noted, whilst that amongst the prisoners shewed a slight increase.

(To be continued)

THE TREATMENT OF SUPPURATION BY PUS INOCULATIONS, AND THE TREATMENT OF PNEUMONIA BY SUBCUTANEOUS INJECTIONS OF THE PATIENT'S OWN BLOOD

By V NESFIELD, F.R.C.S.,
CAPT., I.M.S.

DR BATTY SHAW (*Lancet*, p 48, January 31, 1914)

Mr Whitehouse (*Lancet*, p 40, 1914)

Dr T J Horder, Dr Hector Mackenzie and a large number of eminent men in the medical profession hold that vaccines are useless in the treatment of disease, though they are excellent prophylactics. My impression is that most medical men who have used vaccines agree with the above.

On the other hand, Dr Crofton (*Lancet*, April 4th, 1914), finds vaccines to be the strongest therapeutic remedy we have.

My own experience with vaccines has been miserable, although I learnt the cult from Sir Almroth Wright himself.

In May 1913 I sent a short preliminary article to the *I.M.G.* on the treatment of local infections by pus inoculations, the article appeared in the August number.

The article was the outcome of an endeavour to apply the principles of vaccine therapy in a more rational manner, and my subsequent work and experiments in this direction has given such remarkable results, that I hasten to publish them in the hope that this method may save many lives in the present war.

The success of vaccine therapy turns on two points —

- 1 The suitability of the vaccine
- 2 The dose of the vaccine.

1 The vaccine

Is it rational to use as a vaccine an emulsion of organisms grown on an artificial medium?

(a) The organisms even in a 24-hour culture are many generations removed from the original infecting organism, and have probably developed very different chemical substances and toxins, and hence are not truly similar to those in the lesion.

(b) Dr F H Thiele and Dr Embleton have shown that the toxins of bacteria are in reality cleavage products derived from their living substances under the influence of ferment present in the body of the host

From a study of the production of the tubercle—antibody I am convinced that this is the case. The most successful vaccinations we know of are Jenner's for small-pox, and Pasteur's for rabies, both being living but modified virus, but even if in the case of rabies the organism be killed, we have in the cord the toxins produced by the living organisms in the living host

The logical vaccine treatment therefore for a suppurating wound, compound fracture, boil or carbuncle, inoperable surface cancer, is to inject the issuing pus when rendered innocuous, as this contains the true toxins derived by the living organism in the living host

At first I heated the pus, now I treat it for 24 hours with 1% carbolic acid and camphor. Neither camphor, nor weak carbolic, damage toxins or antibodies, nor do they coagulate nor, as far as we know form compounds with tissue juices

Such a vaccine (pus) not only contains the identical infecting organisms, but also contains active ferments, antibodies, and true toxins

Before proceeding further, a word must be said about opsonins, as it is the opsonic theory which has largely regulated the dosage of vaccines

Is the opsonic theory sound?

Let us examine the following points —

1. Thermolabile opsonin which forms more than 99% of the activating substance in serum is identical to alexin or complement, and cannot be distinguished from it by any reactions

Both are destroyed at an equal temperature, both are absorbed by an antibody combined with its antigen, it is the latter which plays such an important part in an opsonic determination

Let us take an opsonic test with tubercle bacilli on serum from a normal and from a tubercular person

From determinations made in many cases, I find the tubercle antibody content as compared with alexin to be as follows :—

Normal	{ Alexin 5 Antibody 1
Chronic tubercular	{ Alexin 5 Antibody 3.

On mixing these two sera separately with an emulsion of tubercle bacilli, one molecule of opsonin is absorbed from the normal serum leaving 4, and three from the tubercular leaving 2

1 molecule of antibody absorbs 1 molecule of alexin (opsonin) in the presence of its antigen. If leucocytes are added with the sera and bacillary emulsion those in the presence of normal serum will be activated twice as much as those in tubercular serum, the opsonic index would thus be 0.5, where the normal is 1

How should we read this result?

Sir Almroth Wright maintains that the substance he has named opsonin is reduced in disease, and that this reduction is the cause of the disease, i.e., in tubercle, the tubercle opsonin is below normal, hence the tubercle bacillus gets a footing

Raise the opsonic index, i.e., the tubercle opsonin and then the bacilli, though being made palatable, will succumb to the onslaught of leucocytes

Or put shortly a low opsonic index means a low degree of immunity and an opsonic index above normal means high immunity

I read this just the reverse

a Opsonin and alexin are the same thing

β The body forms immune substances (antibodies) when invaded by a bacillus

γ Antibodies by combining with the bacillus (*in vitro*) absorb opsonin, the more the antibody the more the opsonin absorbed

A low opsonic index means a high immunity index

In therapeutic inoculation Sir A. Wright fears a fall and reduces the dose

I welcome a fall His negative phase I consider to be a positive phase

There is only one exception to this rule

When the antibody content is just above normal the quantity of opsonin absorbed is small, while the action of the antibody on the bacilli makes them adhere more readily to the leucocytes, the latter action preponderating

The phases of the opsonic index which I consider to be normal and favourable in disease are —

(1) Normal opsonic index	Normal or no immunity
(2) Super-normal index	A little immunity
(3) Normal index	A little more immunity
(4) Sub-normal index	Established immunity if O V high immunity
(5) Normal index	Less immunity, disease passing off
(6) Super-normal	Ditto
(7) Normal	No more antibodies being formed, disease cured or quiescent

Sir Almroth Wright's—

(1) Normal index	Normal immunity
(2) Sub-normal	Reduced immunity and if 0, no immunity
(3) Normal	Immunity being established
(4) Super-normal	Established immunity

It is a well-known observation that subjects of tubercle always show a high opsonic index during the last and fatal stage of their illness.

Which of these views is right (and it is extremely important to settle this point if we are to measure our doses of vaccines, and degree of immunity by the opsonic index) can easily be proved by any worker who cares to carry out fixation of alexin and opsonic experiments at the same time.

The whole question turns round one point, *is or is not the molable opsonin fixed like alexin or complement by an antibody and its antigen?*

One experiment proves this and it is recorded in the text-books.

Mix equal parts of normal and syphilitic serum with syphilitic antigen, and take up a volume of washed leucocytes and staphylococci, incubate for 15 minutes. The antigen absorbs alexin from the syphilitic serum and not from the normal, in consequence the leucocytes in the normal serum take up far more staphylococci than in the syphilitic serum. When the antigen is excluded from the experiment the opsonic index is the same.

PREPARATION OF THE PUS FOR VACCINE PURPOSES

Wipe the interior of a 1 oz wide mouthed stoppered-bottle with Tinct Iodi, also wipe the stopper. Now rinse out with 1 in 50 carbolic acid.

Collect the pus in this, and add an equal volume of 1 in 50 carbolic acid, put in a piece of camphor, put on the stopper and put in a box (empty biscuit box) in a cool place. This must not be used before 24 hours to allow the organisms to be killed by the 1 in 100 carbolic acid and camphor.

I have injected such pus over 1,000 times and have never found an abscess to result. There is not the smallest necessity to take cultures.

The Dose

First day 2m, 2nd day 3m, 3rd day 4m and so on, daily till 17 mms have been given.

If required 10m doses can be given after this on alternate days.

Prophylactic dose 5m,

The Reaction.

It is quite ordinary to get induration at the site of injection, and for the temperature to rise 1 or 2 degrees. This should not be feared.

Special Syringe for Injecting Pus or other Vaccines.

This is simply a modified pipette.

It consists of a graduated glass barrel brought to a point which is ground to take an ordinary hypodermic needle.

There is a stout teat on the other end.

The dose is sucked up, and the teat allowed to expand, the needle is introduced and the contents expelled by pressure on the teat.

Nothing could be simpler, and as there is no plunger the syringe is very easily cleaned.

The syringe can be sterilized by boiling, but the simplest method is to suck up a little Tinct Iodi, squirt it out, and then suck up 1 in 40 carbolic (to neutralise the Iodine) and squirt it out again.

The pus bottle is opened to take out a dose. Should a stray organism fall in it perishes in 24 hours on account of the carbolic and camphor.

Prophylactic Inoculation

As a prophylactic in cases of compound fracture and in injuries where suppuration is expected I inject 5m of stock pus.

I very often give this also in certain cataract cases, abdominal sections and operations on cancer.

Types of cases in which this method has been used

- 1 Abscesses especially deep ones.
- 2 Septic wounds
- 3 Compound fractures
- 4 Mastoid disease, and osteomyelitis
- 5 After amputation of a gangrenous limb, or fungating cancer of the breast, etc. In these cases the initial dose is 5m worked up daily to 17m.

Modus operandi

Besides stimulating the body to form antibodies to the bacterial toxins and proteolytic fermenters and actually adding prepared antibodies, the inoculations produce a great flow of serum from the walls of the abscess cavity or infected wound, thus bringing antibodies and alexin to the infected area.

PNEUMONIA

An attempt is made to abort the pneumonia, and this often succeeds, by means of the following mixture —

Sodu Citras	grs xx
Liq Ammon Acet	iv
Spt Aetheris Nitrosi	3 1
Magnesium Sulphate	3 1
Aqua ad	3 1
Every 3 hours also Quin Sulph.	grs x TDS

If the disease continues on the 3rd or 4th day, an attempt is made to raise the antibodies and introduce alexin into the system

This is done in the following way —

If there happens to be a patient who has just recovered from pneumonia, 5 c.c. of his blood is injected

If not, a stout vaccine syringe needle is inserted into distended median basilic vein, and from 2-6 oz of blood is allowed to flow out, depending on the state of venous congestion. The barrel of the syringe is then fitted on to the needle, and 5 c.c. of blood drawn up. The needle is withdrawn from the lumen of the vein, and thrust under the skin of the upper arm, and the blood injected, the needle is withdrawn and a bandage applied

The blood clots, setting free alexin and some antibodies, and probably toxins

The immediate effect of the venesection is to produce some relief. Usually there is a rise of temperature of 1° F which can be controlled, if necessary, by sponging. The following day the temperature usually falls, and the decline continues 1° or 2° daily, or there may be a crisis

I have nine cases of pneumonia this year in this way without a death

Cases

1 *Bandi* — Christian woman, November 1913 Abscess right-breast, child 6 months. Opened local anaesthesia 2m pus inoculated 2nd day, worked up to 10m by daily increments of 1m. Suckling continued with left breast. No drainage tube used

2 *Dhu qai* — Age 42, Hindu F, 29th November 1913 Many large septic wounds scalp, shoulder, chest, case of attempted murder with an axe

Temperature 100° F Under antiseptic treatment, wounds failed to heal

On 11th December 1913 Pus inoculations of her own pus begun 2m, 9m reached on December 18th Discharged from hospital on December 19th, with wounds well granulated over. A week later, they had skinned over

This was a remarkable case, as the wounds were washed with 1 in 4,000 Hgcl 3 times a day, and every care taken to bring about rapid healing, as this was a police-case. At one time I thought that she would not live, and yet 7 days of pus inoculations stopped the suppuration, and made the wounds granulate

3 *Dhu m* — Aged 25 years Hindu female Large abscess below gluteus maximus, of 2 months standing

Opened under local anaesthesia, abscess reached 2½" below surface of the skin, 1½ pint of pus evacuated

Cavity well washed out with 1 in 4,000 Hgcl, and incision sewn up with silk-worm gut

Admitted September 30th, 1913 Temp 99° F, abscess opened immediately

Oct 1st	5 ml	pus injected	Temp rose to 100° F
" 2nd	6 ml	"	Evening Temp 99° F
" 3rd	7 ml	"	" 99° F
" 4th	8 ml	"	" 99 6° F.
" 5th	9 ml	"	" 98 4° F

By October 13th, 17ml of pus was reached. She was

discharged on October 27th with the wound securely healed. There was a serious discharge through the stitch holes for one week

I have treated four similar cases. The organism has always been staphylococcus. I am unable to explain the origin of the abscess

Dispensing with drainage is a great advantage.

4 *Mahabu* — Hindu male, age 22, admitted 28th November 1913, mastoid disease Operation same day by Stacke's method,

Pus inoculation 30th November 1913 5ml increasing daily to 11 ml Discharged December 6th.

I have had many such cases

5 *Baboo* — Mahomedan male, age 20, admitted 18th September 1913 Compound comminuted fracture 1t tibia and fibula. The wound was gangrenous and very evil smelling. I thought that it would be impossible to save the leg. Baths of weak KMnO₄ and back splint. T 99 8° F 20th September 1913 2ml of Bitia's pus injected

(Bitia was a case of gluteal abscess Staphylococci) An injection was given daily till 15m had been reached the temp remaining at 99°. After 14m were injected temp rose to 100° after 15m 100° 4. Injections were now discontinued. There was a remarkable decrease of the purulent exudation after the first few injections. He was discharged on October 14th, i.e., after 25 days with the bones well united and a sound limb

During June and July of this year there were four very similar compound fractures treated in the Banda Hospital. All four seemed hopeless, and but for the experience gained from past cases I would have advised amputation. All four were discharged cured under four weeks

6 *Sigdaria* — Hindu male, age 10, admitted September 8th, 1913 T 102° F Compound fracture left humerus four days standing. Limb below fracture gangrenous, foul smelling, and no movement possible in fingers. Limb dead. Leave obtained for amputation September 12th. Main artery and vein tied through healthy tissues, limb cut off at seat of fracture, wound plugged, flaps left open. Tight bandage

September 13th	2ml	Bitia's pus	Temp	100 4
" 15th	3ml	ditto	"	99 8
" 16th	4ml	ditto	"	99 8
" 17th	5ml	ditto	"	99 6
" 18th	6ml	ditto	"	99
" 19th	7ml	ditto	"	98 4

The wound granulated well and all purulent discharge ceased. Discharged October 16th with stump soundly healed

This I consider a most remarkable case as the boy was in a terrible condition on admission

I had a somewhat similar case in Karwi in November 1913. A girl aged 19 from Rajapore with a foul fungat-

ing sarcoma of the left elbow of nine months standing. She was very thin and markedly cachectic. Amputation upper third of upper arm. Wound healed well. She then fell down, wound opened, and a fungating mass appeared which looked like a local recurrence. The sarcoma was a periosteal one. I thought her condition hopeless, but rather than disarticulate at the shoulder joint, I gave her injections of Bitia's pus, and marvellous to relate the mass shrunk away, the girl put on weight, the wound healed, and she left the hospital in three weeks in robust health.

I still think that the fungating mass on the stump was a recurrence, but the sarcoma cells succumbed when not supported by their allies, pyogenic organisms.

7 *Mongia* - Hindu female, age 45, admitted 27th September 1913, with large uterine fibroid, very emaciated, abdominal hysterectomy 27th September 1913 28th September 1913, Temp 102.8° 29th September 1913 Temp 102° 5ml Bitia's pus injected Temp 100° 13th November 1913 stitch abscess Temp 100° 6ml pus injected. 14th November 1913 7ml pus Temp 100° 15th November stitch, abscess dry, temp normal Discharged 18th November 1913, strong wound, and the woman in robust health.

8 Constable Wah Hyder, age 20, admitted 11th November 1913, with large abscess on his skin due to hockey injury. Abscess opened, and inoculations of his own pus given. Discharged cured 25th November 1913.

9 *Dalhan*, admitted 8th November 1913 with large septic wound back of hand following blow from a *lathi*. Bitia's pus was injected T 101° F Discharged cured 22nd November 1913.

10 Hindu male from Kalinagar, aged 30, admitted to Banda Hospital in January 1914. With abscess in lower part left thigh and pus in knee-joint. Opened and drained. Pus inoculations begun. No benefit.

Four days later bone explored, pus found, and 6" of chipped away to expose marrow, and pus. Three weeks of dressings antiseptic irrigations, pus inoculations, etc. No improvement. After 2 months of this condition with a steady spread of the suppuration up the muscular planes of the thigh muscles, and down the calf, amputation advised.

Consent only given after seeing result of another amputation.

Amputation through upper and middle thirds of thigh through the septic area.

Common femoral artery and vein first tied under local anaesthesia.

Chloroform and ether then given. For 5 minutes amputation only took 2 minutes.

Only one vessel tied in flaps.

Wound plugged, and flaps united over plugging, leaving a gap on outer side for removal of plugging. Man extremely weak. No shock from amputation. No hemorrhage as tourniquet was not removed till tight bandages had been applied. Vessels in flaps controlled by plugging underneath flaps and tight bandaging outside flaps.

His own pus inoculations begun following day. Wound in Scarpa's triangle healed by 1st intention. Flaps of amputation wound united. In three weeks the man was discharged with the wound healed. Three months later I met him in the bazaar and scarcely recognised him as he had grown so fat.

I look upon this as a remarkable case.

The pus inoculations were useless at first, as there was pus in the interior of the bone.

Later inoculations were again begun but gave no benefit and were discontinued because of the numbers of pockets which could not be drained.

After amputation his immunity was so raised that union occurred in flaps which were already infected.

11 *Gonorrhœal synovitis of knee* - Hindu male. Fluid aspirated, mixed with equal part of carbolic 1 in 50, and camphor added.

Inoculations given as above.

No recurrence of fluid, perfectly moveable joint.

12 *Bijan*, Oct 1912 - Mussalman male. Large psoas abscess. Incision near Poupart's ligament. Pus washed out, iodoform emulsion introduced, wound sewn up. Pus inoculations given. Discharged after 3 weeks, the abscess cavity did not refill.

13 *Missed extra uterine saturation at full term* - Woman, aged 25, admitted Banda Hospital on August 10th. Abdomen occupied by large tumour. She stated that one year ago she made preparations for the birth of a child, there were labour pains, etc., but no child appeared. Was positive that she had felt foetal movements. She was emaciated, and had bronchitis, could scarcely take any food on account of pressure. Pulse feeble, 100. Mental condition quite clear. Very light general anaesthesia given, chloroform and ether equal parts by a juniper's inhaler. Abdomen opened. Large fluctuating tumour presented adherent to omentum above, and to walls of abdomen. Tumour opened large quantity of liquor amni escaped, and breech of foetus discovered. With considerable difficulty a full term foetus was removed quite fresh skin not peeling, there being pockets for the head and one arm. Cord tied. Uterus found to be as high as umbilicus. Uterus opened, and a dark brown friable mass larger than a foetal head removed. The sac in which child lay appeared to be a very distended Fallopian tube.

A large part of the sac was cut away, and the abdominal wall sutured to the cut edge of the sac near the placenta. The placenta was attached to back of abdomen.

Two large pieces of uterus cut off and the edges united with catgut.

The operation took 40 minutes, the anaesthesia was very light once skin incision had been made. Patient came round immediately her name was spoken. Pulse improved. The large cavity left in the abdomen was dusted with powdered camphor and plugged.

Very little haemorrhage during operation 5ml of Tinct Opium given, repeated whenever pain was complained of.

Food - Horlick's malted milk.

Next day milk and Mellin's food.

Mag Sulph 3i. T D S.

Stock pus inoculations begun the day after operation.

There was a considerable discharge of serous fluid for a week, the cavity gradually contracted. The woman put on flesh, and I have received a letter August 24th, to say she is nearly fit for discharge.

I think but for the pus inoculations she would have died of loss of body fluids and leucocytes as pus from this enormous cavity.

Some of the placenta must have come away in the discharges, but some of it must have become organised.

14. *Four cases of tubercular glands in the neck with septic sinuses*. Complete removal. In one case the internal jugular vein was tied.

These cases were given pus inoculations, also inoculations of the emulsified glands. In all 4 cases the wounds united firmly.

15 *Sarcoma of upper jaw*—Hindu male, February 1914, Banda Hospital. Complete removal, with preliminary laryngotomy, and temporary ligature of common carotid, and permanent ligature of external carotid.

Cavity packed with gauze and camphor. Pus inoculations, and inoculations of emulsified growth in 1 in 100 carbolic. Rapid healing. No recurrence 2 months later.

In a former communication I have described inoculation of malignant growth, and showed an example of the disappearance of a carcinoma of the breast in a case in Bijnor in 1912. The recurrence was in the opposite breast.

The growth is cut up as small as possible with scissors, and this is then mixed with sand and pounded up with 1 in 100 carbolic acid.

It is allowed to sediment for 6 hours, the supernatant fluid and tumour emulsion is pipetted off, placed in a sterile bottle and camphor added. The doses I gave were 20 ml every 2nd day.

CONCLUSIONS

I have only quoted some typical cases. In not a single instance has the inoculation done harm, while on the contrary every case has been improved where pus has been evacuated. Some of the results were truly marvellous, and have changed my outlook on surgery.

With pus vaccination I feel confident of saving a limb with a foul compound fracture provided the patient can move the fingers or toes. Instead of large incisions and drainage tubes in abscesses, I now evacuate the pus, wash out the cavity, introduce iodoform emulsion, and sew up the wound.

APPENDUM.

The role of the leucocyte in local infections

The usual conception is that the leucocyte comes to an inflamed area to attack the invading organism. As a result of experiments which I will show later, I am led to think that the true explanation is as follows—

1 A local bacterial injury through tissue death sets free nucleo-proteids which coagulate the local plasma, setting free alexin. It must be remembered that alexin does not exist in circulating blood (nor does the molabile opsonin) and that alexin is a powerful proto-plasmic poison.

2 Leucocytes constantly glide through tissue spaces, any coming into the infected area are damaged, the proto-plasm swells, and the cell wall becomes glutinous and hence they lodge. Many of them succumb and set free more alexin, which causes a further concentration of leucocytes, and local swelling. That is to say, the leucocytes do not come for attack, but are inadvertently trapped.

It might be said that leucocytes engulf cocci in vitro, and that the phagocytic theory is entertaining. But no one has yet seen staphylococci inside pus cells, or in circulating leucocytes in cases of septicaemia, although these same leucocytes in serum derived from such a case, will take up thousands in vitro.

The gonococcus is found in leucocytes, but here the cocci and leucocytes are in a capillary space under the conditions of an opsonic test.

I think that the following points will bring home my contention:

1 Blood when removed, and this or its serum injected subcutaneously into the same patient produces not only fever but local induration (action of alexin).

2 Leucocytes soaked in 1 in 4,000 Hgcl, for 20 minutes and then thoroughly washed, take up staphylococci in the presence of flesh serum, although there is every reason to believe that the leucocytes are killed by this treatment.

3 In smears leucocytes treated with flesh serum and toxin (supernatant fluid from an emulsion of staphylococci) are larger than leucocytes treated with heated serum.

4. If two capillary tubes be drawn out to a fine hair, and one be filled with leucocytes toxin and flesh serum, and the other with leucocytes toxin and heated serum, and then if the leucocytes are forced along each tube simultaneously by blowing with the mouth, those with heated serum can be blown further along than those in the unheated serum.

Some practical points bearing on this theory

1 There is reason to believe that the cells at the site of infection are hampered in their antibody forming powers. Inoculate in healthy tissues.

2 The toxin absorbing powers of an abscess cavity is very small, in a large gluteal abscess, I found 2 ml of pus injected to raise the temp 2° F. After evacuating the abscess (there were 2 pints of pus in the cavity)

∴ Treat an abscess well with the greatest delicacy.

3 Alexin is important in combating infection—

(a) Leave blood clot in an abscess cavity.

(b) Retain serum in it, don't drain it off.

(c) Inject some of the patient's own blood subcutaneously in cases of erysipelas, pneumonia, etc.

(d) Or inject distilled water 5 cc or any vaccine, e.g., tuberculin (in non-suppurating cases) this kills some of the local cells, thus producing alexin as shown above.

Indian Medical Gazette

DECEMBER

THE BOMBAY TROPICAL SCHOOL

It is satisfactory to learn that substantial progress has been made in Bombay towards the establishment of the Tropical School and of a Hospital close by.

By an old arrangement when the Government of Bombay undertook the charge of the Bombay City Police the Municipality on their part undertook the charge and upkeep of hospitals for the treatment of the sick.

Under these circumstances Government it appears, could not provide a hospital for the School of Tropical Medicine and the help of the Municipal Corporation had to be sought. It so happened that that body had already determined to erect a hospital in the northern part of the island, where a large population had of recent years arisen in connection with mills and railways, in the neighbourhood. Then after the death of King Edward VII it was decided to build a hospital with the funds collected in memory of King Edward. This fund while sufficient to build an hospital was not sufficient to maintain it properly, and the Fund Trustees approached the Corporation with a view to co-operating with them, at the same time the Government offered the Corporation as a gift a piece of land as a site for the hospital. We are glad to say that the Medical Relief Committee of the Corporation have recommended to the Corporation that the offer of the King Edward Fund Trustees and the offer of the land by Government be accepted, and that fifty beds in the new King Edward Hospital shall be placed at the disposal of the staff of the School of Tropical Medicine, and that the staff of the school should control the patients and hospital servants under rules made by the Corporation Committee.

This is altogether satisfactory, and we understand that the building of the King Edward Memorial Hospital will be shortly begun. As for the buildings required for the Tropical School, it is understood that accommodation for the Teaching Staff will be available by November.

The Bombay medical profession, the public and the Government are to be congratulated on this satisfactory and harmonious settlement of the important undertaking.

Current Topics

NEW RULES REGARDING ALLOWANCES ON TRANSFER

We are very glad to learn that the Government of India propose to substantially improve the Civil Service Regulations governing the travelling allowances of officers on transfer. It is well known how ruinous frequent transfers are and the pittance received for railway fare is very far from covering the out of pocket expenses.

The Government has been considering the question for some years past, and in 1906 Lord Minto's Government made certain proposals, and since then various local governments have strongly represented the inadequacy of the travelling allowance rules in cases of transfer. As a consequence the Government of India in their despatch, dated 16th April 1914, made the following proposals which will go far to remove a very real grievance though it is (as the despatch says) "the minimum measure of relief which can reasonably be proposed for the present".

It is as follows —

"In view of these renewed representations we have once more reconsidered the whole question of the revision of the rules, and though we do not at present feel ourselves in a position for financial reasons to recommend to your Lordship the comprehensive proposals which were framed by Lord Minto's Government, we are anxious to afford an appreciable measure of relief to our officers for an admittedly long-felt disability. The alterations in the existing rules which we would now propose for your Lordship's sanction are as follows —

(a) Free transport on transfer of personal effects by goods train or steamer up to a maximum of 40, 20, and 10 maunds, respectively, for the three classes of officers and the free carriage of tents in Madras, or wherever tents are not supplied to touring officers by Government but have to be purchased and maintained by them, the number of tents so carried being subject to a scale to be prescribed by the local Government as suitable to officers of a particular class.

(b) Free transport of one horse for a second class officer and two horses for a first class officer when—

(i) The distance travelled exceeds 80 miles (cf paragraph 102, Army Regulations, India, Volume X), and
(ii) The officer's duties involve touring or similar work necessitating his keeping his own horses.*

We do not propose to make any change in the existing rules as to railway and steamer fares, but the application of article 1000, Civil Service Regulations, will hereafter be restricted to journeys on tour.

In order to simplify the new rules as far as possible we propose that they should apply to all transfers whether between or within districts, provided, of course, that the officer is transferred for the public convenience, but we contemplate at the same time that the rule in article 1098 of the Civil Service Regulations should continue to be in force in the case of those officers to whom it at present applies."

THE YELLOW FEVER COMMISSION REPORT

The Secretary for the Colonies in February 1913 appointed a Commission consisting of the

* Why not a Motor in lieu of two horses?—ED.

following well-known medical men to "study the nature and frequency of the fevers occurring among Europeans, Natives, and others in West Africa, especially with regard to yellow fever and its minor manifestations," viz., Sir J. Kingston Fowler, M.D., K.C.V.O., Sir Ronald Ross, K.C.B., I.M.S. (1st ed.), Colonel Sir William Leishman, R.A.M.C., and Prof W. J. R. Simpson, C.M.G.

This Committee apparently did not visit West Africa but various Sub-committees have done so their main work was to investigate the group of febrile diseases which may be or have been confused with yellow fever under various names, e.g., bilious remittent, acclimatising fever, hyperpyrexial fever, three-day; seven-day, low fever, febricula, and how these fevers are to be differentiated from yellow fever and from malaria.

The Second Report has now been published, but is of the nature of an *Interim report*. It deals very fully and in an interesting way with the history of yellow fever on the "West Coast," and we note that the Committee do not agree with the view of an endemic origin of yellow fever, but hold that it had its origin in the West Indies and countries bordering upon the Gulf of Mexico, though it is probable that cases have been known on the West Coast for centuries past. They also point out that the native population is immune to yellow fever "as little as it is immune to malaria." The following are the conclusions reached on the second report dated 1st July, 1914 —

"A consideration of the facts brought out in the several sections of this report and in the evidence which has come before them during the course of the enquiry, so far as it has hitherto been carried, has led the Commission to the following general conclusions —

1 That Yellow Fever has occurred from time to time since 1778 in various parts of the British West African Colonies

2 That there is no evidence to show that the infection in each outbreak has been introduced from outside Africa

3 The mild nature of the attack in certain cases of Yellow Fever makes the identification of such cases a matter of great difficulty. It is therefore essential that in the future all cases of fever should be carefully observed and classified in order that, so far as possible, such mild cases of Yellow Fever may not pass unrecognised.

4 The attention of all workers at this subject should be specially directed to the discovery of a clinical test for Yellow Fever. The Commission do not in the least degree underestimate the importance of the researches which they are prosecuting in connection with the nature of the virus, and also of research as to the appearances by which its presence could be recognised in the body of the mosquito, indeed, it is quite possible that by such researches the desired clinical test may be found, but the extreme practical importance of being able to determine whether a mild case of fever is or is not Yellow Fever renders it essential that all possible methods should continue to be employed in the clinical study of the disease.

5 The Commission are of opinion that the day has gone by for endeavouring by the use of euphemistic

terms to conceal the presence of Yellow Fever, and that the only hope of eradicating that disease lies in boldly facing the facts, also that failure to take all possible steps to destroy a focus of Yellow Fever is an offence against the comity of nations."

THE PHILLIPINE JOURNAL OF SCIENCE

As is usual, the June number of the *Phillipine Journal of Science* (Vol. IX, Sec. B, No. 5, June 1914) is full of good papers.

Dr Fernando Calderon has a useful article on the medical geography of the Philippines, where such well-known "tropical" diseases exist in abundance as beri-beri, malariæ, leprosy, the dysenteries, filaria as well as the cosmopolitan diseases, typhoid, small-pox, and tuberculosis.

Dr John A. Johnston has a note on the bacteriology of leprosy, and he thinks that "the bacillus, *lepræ* is but the acid-fast stage of a markedly pleomorphic streptothrix."

Dr Musgrave and Sison have a valuable article on bacillary dysentery from which we make the following extracts —

"The word 'dysentery' should not be used in medicine except to represent the 'clinical complex' of bloody stools, tenesmus, etc., for which it was originally employed. In this sense, it represents many diseases both pathologically and etiologically. In fact, any type of colitis, whether primary or secondary, may be expressed clinically as 'dysentery.' On the other hand, definite pathologic lesions of the colon of specific etiology at one time may be associated with 'dysentery,' and at other times may exist without material disturbance of the bowel evacuations, and in still other instances may be associated with constipation. Such conditions are so well-known that they need not be discussed.

Scientific nomenclature, at least, should recognise diagnoses based upon etiology as far as possible. When the etiology is unknown, naming the pathologic condition as a diagnosis is acceptable, and only when both etiology and pathology are not known is it justifiable to use a 'clinical syndrome' as a diagnosis.

This is particularly true of diseases associated with disturbances in the evacuation of the bowel contents, whether as 'dysentery,' 'diarrhoea,' or 'constipation.'

In no other classes of disease are 'slipshod' methods of diagnosis, which are based upon the obvious clinical symptoms, fraught with more danger to the patient, and there are no diseases where there is less excuse for perpetuating the practice."

ASSOCIATED DISEASES

In 61.6 per cent of the cases, the colitis was associated with other diseases, and the mortality in such double diseases was 57.1 per cent.

The principal associated diseases with their incidence is shown in the following table —

Associated diseases	Cases	Associated diseases	Cases
Phthisis	18	Oxyuriasis	2
Duodenalulcer	1	Amœbiasis	10
Ascariasis	48	Strongyloidiasis	1
Trichuriasis	57	Tubercular intestine	2
Ankylostomiasis	31	Malaria	8
Monadiasis	11		

Dec., 1914]

COMPLICATIONS OF DYSENTERY

COMPLICATIONS

In 30.1 per cent, of the cases other conditions believed to be complications of the bacillary infection were encountered, and the mortality in the presence of complications was 59.1 per cent.

The complications noted, with their frequency, are as follows —

Complication	Cases	Percent	Complication	Cases	Percent
Malaria, acute	2	0.7	Rheumatic fever	2	0.7
Nephritis acute	37	13.9	Lymphadenitis	8	3.0
Bronchopneumonia	14	5.2	Oesophagitis	1	0.4
Bronchitis	9	3.4	Splenitis acute	1	0.4
Acute cardiac dilation	5	1.9	Meningitis	5	1.9
Gastroenteritis	6	2.3	Hydrocephalus	2	0.7
Neuritis, multiple	2	0.7	Fibrinous pleurisy	4	1.5
Abortion	6	2.3	Hydrocephalus	2	0.7
Prolapsus ani	2	0.7	Peritonitis	6	2.2
Hæmorrhoids	4	1.5	Pneumonia, lobu	2	0.7

These complications, while not all due to the influence of *B. dysenteriae*, must nevertheless somewhat elaborate our previous conception of the extensive harm which may result from this organism.

For example, Strong and Musgrave, out of a total of 271 autopsies performed in 1899, encountered 111 cases of colitis. Of these, 21 were classified as acute specific bacillary dysentery, 11 as subacute, and 79 as amoebic dysentery. The complications, associated diseases, and special anatomic findings in the acute bacillary type of the disease are recorded as follows —

Malaria fever	2
Chronic gastric catarrh	2
Broncho-pneumonia	3
Acute pleurisy	1
Congestion and oedema of lungs	4
Cloudy liver	2
Cloudy kidneys	5
Fatty liver	1
Fatty kidneys	1
Enlarged spleen	5

More recent writers have included a number of other complications of these infections to such an extent that the dysentery term must be classed with that of other severe infections in its action on organs and parts of the body distant from the seat of lesion.

After mentioning the value of the saline treatment and that by fractional doses of calomel and the uselessness of ipecacuanha in bacillary dysentery the writer goes on to say —

"The essential part of the treatment, however, is dietetic. During the first twenty-four hours of the acute stage of the disease food must be withdrawn. Pieces of cracked ice may be given to allay thirst. At the end of twenty-four hours, we allow the patient albumen water or rice or barley water and later skimmed or peptonized milk. When improvement has begun, milk, broth, beef juice, and orange juice may be given. The mouth must be frequently cleansed with an antiseptic mouth-wash to prevent the frequent complications of parotitis and gastritis."

The serum treatment, first recommended by Shiga in 1898, has both advantages and disadvantages. If the variety identification of the bacillus which is the cause of the infection can be carried out with readiness, as well as with accuracy, this scientific treatment ought to yield a greater percentage of cures than usually is obtained. For practical purposes, however, especially

in those cases that have to be treated in places where the means of identifying the infecting microorganism are not available, it is a failure in most instances. The sera of patients suffering from one form of bacillary dysentery usually will not agglutinate other varieties of *Bacillus dysenteriae*.

It is possible that Flexner's polyvalent serum might be used for any acute bacillary dysentery. However, what we have already mentioned in the discussion of the etiology of dysentery, in regard to the etiologic importance of other microorganisms, such as streptococci, staphylococci, colon bacillus, and others concerned in the production of colitis under certain circumstances, will make the use of even a polyvalent serum unsatisfactory in many instances.

THE AMERICAN JOURNAL OF TROPICAL DISEASES

We have received the first number of the second volume of this new publication.

It is the official organ of the American Society of Tropical Medicine and is published at New Orleans under the Editorship of Dr Charles Chassaignac and Dr Isadore Dyer and the Tropical School is part of the Tulane University.

The present number contains several articles of interest. An editorial asks "why not blot out leprosy?" and faith is pinned upon destruction of the "leprosy bedbug".

Dr A Agiamonte of Havana gives an instructive account of the late outbreak of plague in Havana in 1912, and an illustration which shows the rat-hole ridden thick mud walls of houses forcibly reminds us of similar walls seen in Punjab and in Bihar. The outbreak did not go beyond the City of Havana and the rest of Cuba escaped.

Another interesting review of tropical medicine is by Dr R P Strong (now Professor of Tropical Medicine at Hazrair), and he emphasises the need of a American Colonial Medical Service, specially trained.

Major Weston P Chamberlain has a useful study on the blood of healthy persons resident in hot countries. We cannot here quote his figures and tables, but he shows that the figures "do not indicate an impoverished condition of the blood" and the expression "tropical anaemia" is "not due to the effect of climate per se". He refers to Major D McCay's investigations.

Dr M V Safford has a useful article on that tropical scourge trachoma, from the public health point of view, and Dr L Schwartz, of Cebu, discusses its treatment by *grattage* (by removing the granulations) which he claims to be very successful.

The new journal is likely to be a success and of great interest to medical men in tropical and subtropical countries.

THE DANGERS OF TUBERCULIN

We have some time ago pointed out the dangers of the indiscriminate use of tuberculin, especially in the hands of those who are not experts.

In view of the too widespread use of this dangerous remedy in many parts of India and especially by ordinary practitioners the following extracts from *The Practitioner* (Sept 1914) are of interest and value as a warning —

Dr Bennett in a small book "Plain Rules for use of Tuberculin" (Wright & Sons, Ltd) gives the following conclusions —

"(1) Medium treatment (as opposed to rapid or slow) is best— injections at intervals of six or seven days graduated so as to produce only focal reactions, and so as to avoid, at all costs, general reactions, in the patients injected'

"(2) Tuberculin used may be (a) soluble (exotoxins) and (b) insoluble (endotoxins), human or bovine, but no hard-and-fast rule can be laid down as to which form of tuberculin is best for any particular patient or patients" (Auto-vaccines, prepared at the bedside from the patients themselves, may be the treatment of the future)

"(3) A syringe with medium-pointed needles and holding 1 c.c. (sub-divided into tenths) is best, with a separate syringe for each dilution and a spirit lamp sterilizer, which should be long enough to take the syringes (with the needles out). No dilutions weaker than 1/10 should be kept for more than seven days, and the dilution bottles should be closed with flexible rubber caps, through which the needle is plunged, when a dilution has to be introduced or a dose withdrawn.

"(4) Dosage—commence with PTO (0.0005 c.c.) and continue weekly with increasing doses up to the patient's optimum dose (not to exceed a maximum 1 c.c.) then pass from the completed course of PTO to TR beginning, as a rule, with 0.001 c.c., and completing the series on reaching a maximum dose of 0.1 c.c., to be repeated two or three times at intervals of two or three weeks, and, finally, end with a carefully administered course of old tuberculin, beginning with 0.002 c.c. and increasing 0.001 c.c. at a time, never exceeding, and rarely attaining, the maximum dose (1 c.c.). The whole course will take 12 months."

Sanatorium treatment plus tuberculin treatment is better than tuberculin treatment alone. The better the environment of the patient injected, the greater is the chance of the tuberculin treatment being successful. Segregation of advanced patients is absolutely necessary.

Tuberculin is *contra-indicated* in the following circumstances —

1 In fever—a temperature over 99.4° F to be an absolute bar.

2 In haemoptysis

3 In the presence of any acute intercurrent disease

4 In women during menstruation

5 In persons who are not capable of response, generally due to the presence of secondary infections.

There are individuals who, for reasons which cannot be fathomed, are unsuitable for tuberculin treatment—persons who may be grievously damaged by being injected with tuberculin.

Dr Noel D Bairdswell of the King Edward VII Sanatorium, Midhurst, also reports as follows —

"Dr Bairdswell's conclusions, or suggestions, as to the direction in which opinion is tending, may be tabulated as follows, it being prefaced that it is impossible to give anything like a final opinion as to the value, or otherwise, of tuberculin, on the strength of the statistics set out in the report —

(1) Tuberculin (as it present used) is not a remedial agent, which can be depended upon to revolutionize sanatorium results.

(2) Tuberculin has not proved itself to be a remedy in the ordinary sense of the term.

(3) Tolerance to tuberculin is not necessarily a valuable asset to the patient.

(4) *Tuberculin is, in a proportion of cases, definitely prejudicial and, consequently, the administration of tuberculin is quite unsuitable, as a routine method of treatment, for all cases of pulmonary tuberculosis, and, further, its indiscriminate and careless use, on a large scale, can only end in harm"*

BURSATI

ALL of us in India who own horses are well aware of the disease known as *bursati* and many will welcome the pamphlet published* on this subject for the Agricultural Department by Major J. D. E. Holmes, C.I.E., the Imperial Bacteriologist at Mukteswar. The conclusions arrived at are given herewith in Major Holmes' own words —

"I A considerable amount of confusion exists in literature regarding the identity of Bursati in India with 'Leeches' in America, 'Swamp Cancer' in Australia and other affections described as 'Summer Sores,' 'Granular Dermatitis' and 'Parasitic Fibromata,' etc

II The latter afflictions such as 'Summer Sores,' 'Granular Dermatitis' and 'Parasitic Fibromata,' etc, are held, on the observations of several authors, to be connected with the presence of nematode embryos

III Bursati varies in most clinical aspects from the afflictions described as 'Summer Sores,' 'Granular Dermatitis' and 'Parasitic Fibromata,' etc

IV There is not sufficient evidence to prove that nematode embryos are present in Bursati lesions or that the Bursati sores or tumours are caused by such embryos

V There is a similarity in several clinical aspects between 'Leeches' and 'Bursati'

The presence of a fungus in 'Leeches' has been recorded by several observers and described as causal agent. The spores and mycelia of a somewhat similar fungus are frequently to be found in the lumps and tumours of Bursati

VI The presence of spores and mycelia in the Bursati tumours, and the fact that cultures of a fungus of the genus *Sporothrix* have repeatedly been obtained from Bursati tumours and lumps and also direct from the blood of horses infected with Bursati, affords some evidence that the disease is a mycosis somewhat resembling the Sporothrixosis of the horse and mule described by Caronjeau in Madagascar."

We are glad to welcome the new and improved series of *The Glasgow Medical Journal*. It is edited by Dr G. H. Edington and Dr D. R. Jack. The new Journal is very well and clearly printed. The table of contents does not materially differ from the old copies of the long established Journal, of which the present volume is the 82nd.

THE U.S. Department of Agriculture announces that a "small amount of Boixia sprinkled daily on manure will effectually prevent the bleeding of flies. Experiments quoted in the new *American Journal of Tropical Disease* (Vol. II, Pt. 2, August), show that a little over half a lb of boixia or $\frac{3}{4}$ lb of "calcined colemanite" (cinder

calcium borate) will kill maggots and prevents their development in about 8 bushels of horse manure. "In garbage cans" 2 oz of borax (costing about 1 anna a lb) "will effectually prevent flies breeding."

Medical officers in charge of regiments, jails and asylums would do well to try the use of borax in this way.

We are glad to see Sir Wm Osler's excellent lecture to the officers and men in the Camps at Chum reproduced as one of the "Oxford Pamphlets" (price one penny). The advice given and the stern facts of the danger from enteric, etc., are of great importance, and a wide circulation of this useful pamphlet is certainly desirable.

We are very glad to hear that Dr Aldo Castellani, who in recent years has worked up so ably the Clinic for Tropical Diseases at Colombo has been offered and has accepted the chair of Tropical Medicine in the University of Naples, and the Directorship of the Royal Clinique for Tropical Diseases in the same city. Dr Castellani, at the request of the Ceylon Government, we understand, remains on at Colombo till early in the new year in order to enable a successor to be chosen and appointed in his place.

We heartily congratulate Dr Castellani on his well deserved promotion and the Naples University on having acquired such an able and experienced worker.

We have received the report of the Research Defence Society for 1913. The number of names on the books are 5,000, and it is recorded that over 60 I M S officers belong. As a matter of fact the total number should be 15,000 members and not less than 600 I M S officers should be enrolled. The work done is so well known that we need not here give space to describe it. It is useful to all the world and we medical men know this. We should therefore join whole-heartedly in support of this Society. Mr Stephen Paget, F R C S, is the Hon. Secretary and his address is 21, Ladbroke Square, London, W.

Reviews.

CORRIGENDUM

We should call attention to the review of Meyer and Gottlieb's great book on Pharmacology. The book is published by Lippincott Co., but the Agents in India are Messrs Thacker, Spink & Co., Calcutta, and not as stated in our review.

Lyon's Medical Jurisprudence for India.—By Colonel L A WADDELL, C B, CIE I M S, retd 5th Edition, Thacker, Spink & Co., Calcutta.

THE appearance of a new edition of Lyon's *Medical Jurisprudence for India*, again edited

by Colonel L A. Waddell, is something of an event in medical and legal circles in India. This well-known volume needs little recommendation. Each successive edition since its first appearance in 1838 has commanded a wide circulation, and the book has now taken the place that once was held by Norman Chever's delightful volume.

Each successive edition has been an improvement, but in no edition have the changes and additions been so numerous up to date and valuable as in the present edition. For example, it is well-known that the modern biological tests for blood-stains have revolutionized legal procedure in the matter of evidence on this subject, and fortunately the Government of India have realised the importance of this work, and they have had the good fortune to have in Lieut-Colonel W D Sutherland, I M S, an expert in this difficult work second to none in Europe. The sections therefore of this book dealing with this important matter are well up to date and authoritative. Major W H Dickenson, I M S, in this matter one of Lieut-Colonel Sutherland's pupils, has materially contributed to make plain a difficult subject by his excellent illustrations. The chemical section has been revised by Dr E H Hankin, D Sc, of Agria.

The appendices are as useful as ever, especially the one on Indian Life Assurance, from these columns (*I M G*, 1913, p 174), and the very pertinent list of questions which may be put to professional and to non-professional witnesses in Court.

We can strongly recommend this new edition to our readers, no Civil Surgeon can afford to be without it, and it will be found equally useful by legal practitioners. It is an able, accurate, and comprehensive exposition of Indian Medical Jurisprudence.

"Mental Deficiency (Amentia)" Second Edition—By A F FREDGOLD Published by Messrs Baillière, Tindall & Cox.

THIS edition fully maintains the high standard of its predecessor. It has been brought up-to-date and gives in a lucid manner an excellent account of its subject in all its aspects. No one who reads this work can fail to grasp the importance of this subject, as affecting the nation, and the necessity of prompt and carefully chosen legislation for the proper care and management of such cases, so that by proper training the burden which they at present impose upon the rest of the community may be lessened and by a well-devised system of engines that their incidence may be diminished in the future.

In Chap I, the meaning of the term is discussed, and it is finally defined as "a state of restricted potentiality for, or arrest of, cerebral development, in consequence of which the person affected is incapable at maturity of so adapting himself to his environment or to the requirements of the community as to maintain existence independently of external support."

Chap. II deals with the statistics of such cases in Great Britain and Ireland. The work of the Royal Commission of 1904 is here referred to, and valuable deductions made and tables drawn up which are of great interest from many points of view.

Chap. III is devoted to the aetiological aspect of the subject which is discussed under the headings "Intrinsic or Primary" in which all defects or variations of the germ-plasm, leading to imperfect development of the brain, are included, and "extrinsic or environmental causes." The enormous power of the first, or hereditary, group is strongly emphasized. The author in discussing the question is inclined to discard the Mendelian theory and to explain many such cases as the results of heredity and those of environment (very commonly some abnormal physical condition of the mother during gestation), and he is convinced that in the great majority of cases the real underlying condition is an impairment of the germ-cell.

The discussion of the causes of the impairment of the germ-cell is original, lucid, and well supported by outside evidence. The doctrines of De Tries, Mendel, and Weismann are all set aside and the author ably upholds his dictum that the germ-plasm is not immutable but that it may, and does, undergo modification by the environment. This he explains as an impairment of the intrinsic potentiality for development which may affect the nerve-cell as a whole or only its neuritic determinant.

Extrinsic causes acting alone are said to account merely for some 10-15 per cent of all cases, the cause in most cases being malnutrition in infancy, generally due in most cases to that "combination of causes—dirt, drink, and depravity—which goes to make up slum-life in its worst form."

The remainder of the chapter ably sums up the various causes, both intrinsic and extrinsic, and it is interesting to note that in the author's experience illegitimacy, the mental state of the mother during pregnancy, and the mother's impressions, flights, and shocks during the same period have but little result on the mental state of the offspring provided she be free from a neuritic inheritance.

Chapter IV deals with the pathological aspect of the subject. A brief résumé of the normal cerebral development is first given, and then the changes found in the various elements of the brain tissue are gone into in detail and changes in the meninges, blood-vessels, and skull are also discussed. This chapter is well arranged and capably handled, and will be found interesting and instructive by those who concern themselves in this matter.

The classification dealt with in Chapter V is one founded mainly on degree, and secondly on aetiological causes. It has the merits of being clear, simple, and easy to follow, while giving its

adherents also very clear indications as to the prognosis in individual cases.

Chapter VI gives the reader a précis of "Neuro-physiology and Psychology." This part of the subject is dealt with under three headings, sensation, cerebration, and action, each of which is again divided into various sub-headings. The chapter is well arranged and up to date, and gives a clear, concise account of its subject in simple easily comprehended language.

In discussing the physical characteristics of amentia (Chapter VII) the author is not in accord with the various classifications of the "stigmata of degeneration" promulgated by other writers. He holds that the development of mankind is still progressing, that it is practically impossible to define the "normal," and that quite possibly many of the anomalies at present described as "stigmata," far from being retrogressive, may even be progressive in character. This chapter is well worth perusal, for, besides giving a good idea of the physical anomalies met with in such cases, the subject is dealt with in a broad-minded commonsense manner which should render it valuable to the sociologist and medical jurist as well as to the ordinary medical practitioner. The chapter closes with a discussion on the mortality among the mentally deficient, and some interesting "tables" are given which demonstrate clearly the diminished "expectation of life" which prevails among such cases at every age-group.

The seven succeeding chapters are devoted to a description of the various types of mental-deficients. The types laid down by the Royal Commission of 1904 are first described in detail, each type being excellently elucidated by various cases as well as by illustrations. The subject is then discussed from a clinical point of view, and here again each type is illustrated by cases and plates. This section of the book closes with a most interesting chapter on "idiots savant" where the lives of several renowned aments are narrated.

The chapter on moral deficiency and criminal aments is ably carried out and should be one of much interest in view of the present unsatisfactory state of legislation on this question as well as on criminal responsibility.

Mental tests and case-taking are matters of some little trouble to many medical practitioners, when dealing with cases of this kind, and the pages devoted by the author to a description of these should prove invaluable to his professional brethren.

Similarly the diagnosis and prognosis, treatment and training of such cases form chapters replete with information valuable not only to the general practitioner and those of the laity interested in such matters but also to those who devote themselves to this special branch of medicine.

The last chapter is given up to a discussion of the law in England with regard to Aments. This is one of the most valuable chapters in the whole book and deals with the various questions raised in a true, commonsense manner, looking

at each and all from every side and remembering that besides legislating for the benefit of the mentally deficient the welfare of the community as a whole deserves at least an equal amount of attention.

The book is well worth perusal by all interested in a subject so important to the welfare and prosperity of a nation, and it can be thoroughly recommended to all who have the well-being of their race at heart and wish to maintain its present standard and raise it, if possible, to still higher levels.

Disease of Children. Vol VI Otology—By PFAUNDLER and SCHLOSSMANN, translated into English by H SHAW and L LA FETRA London J B Lippincott Calcutta Butterworth & Co, India, Ltd

THIS monumental book is only the sixth volume of a series on diseases of children. The book is, of course, a good one and full of the latest information, but is quite useless for sale in India. It should be in every big medical library, but in a land of transfers like India such ponderous tomes are quite useless, and we cannot recommend any Civil Surgeon to burden himself with such heavy books.

We have no quarrel with the book itself, and we recognise its great value as a reference book, but in no other way can we recommend it.

Aids to Dental Anatomy, &c—By A. S. UNDERWOOD, M.R.C.S., L.D.S. London 3rd Edition 1914 Baillière, Tindall and Cox. Price 2s 6d, cloth

THIS is an excellent little book on the anatomy and physiology of the teeth. It may not be sufficient for dental students but contains amply sufficient for any medical student. The section on age and teeth is excellent. The little book can be well recommended.

ANNUAL REPORTS

THE PUNJAB SANITARY REPORT FOR 1913

The annual report of the Sanitary Commissioner of the Punjab is a document of much interest, reflecting, as it does, the great attention now being directed towards sanitation in this Province. To this fact the assembly of the first Provincial Sanitary Conference, the appointment of an additional Deputy Sanitary Commissioner, the institution of a course of training for Sanitary Inspectors, and the numerous sanitary prospects mentioned in the report all bear witness. The year 1913 was an usually healthy one, the death-rate being only 3 56 per mille in excess of that of the previous year, which was itself the lowest on record since 1886, whilst the birth-rate was 45 4 per mille or 15 2 in excess of the death-rate. During the decennium 1900-1911 the population of the Punjab underwent a decrease of about 2 per cent, as the result mainly of the effects of epidemics of malaria and plague,

the total number of deaths due to these diseases being 4,500,000 and 2,000,000 respectively.

As the result, however, of a series of healthy years the total population in 1913 is estimated to have increased by some 800,000 as compared with the census population in 1911. In these circumstances Lieutenant-Colonel S. Browning Smith, the Officiating Sanitary Commissioner, points out that the true total death-rate is somewhat lower than the provincial death-rate calculated on the census population of 1911, and, for a similar reason, it may be added, the birth-rate is somewhat higher than the actual. He suggests therefore that greater accuracy would be achieved if in future the population present in the middle of each intercensal year were calculated on the basis of the increase or decrease exhibited in the two previous censuses. It is however open to doubt whether the adoption of this proposal, at any rate in the above form (which gives satisfactory results in the United Kingdom) can be advantageously extended to the Punjab.

In the first place, grave and widespread epidemics are now unknown in the United Kingdom, whilst in the north of India their periodical occurrence (particularly of those due to malaria) must seriously prejudice the accuracy of calculation, based on antecedent census figures.

In 1891 and 1901, for example, an increase in the population of roughly 2 millions and 1½ millions, respectively, took place, from which it might have been inferred, if the conditions were the same as those prevailing in England, that an increase in a similar ratio would have occurred in 1911, whilst as a matter of fact, as the result of epidemics of plague and malaria, a decrease of 566,985 in population was recorded. Again in countries which are in a state of rapid development, large migration of the population are apt to take place, thus in the Punjab, in consequence of the opening up of the Canal Colonies and other causes, very extensive movements of the population are not uncommon. In these circumstances the calculation of the actual population of individual areas at any given time may be a matter of extreme difficulty, which will not be entirely overcome by adopting the alternative method of adding the total births to and subtracting the total deaths from the figures of the preceding census. Whilst therefore the present system, in which the population at the last census is utilised as the basis for calculating birth and death-rates during intercensal years, is open to obvious objection, it is by no means certain that an alternative method exists which is capable of yielding more accurate results in the case of India.

Cholera—After four years of comparative freedom from cholera this disease assumed epidemic proportions in certain parts of the Province causing, chiefly during the months of July and August, 5,811 deaths.

A small epidemic, accompanied by 681 deaths occurred in the city of Sialkot, which was rendered

noteworthy by the efforts, unsupported however by public opinion, of Captain R T Wells, I M S, the Deputy Sanitary Commissioner, to control the epidemic. The comparative prevalence of the disease in towns was noteworthy. Thus out of 128 towns no less than 46 were infected, whilst only 590 out of 33,112 villages were involved in the epidemic. Whilst the epidemiological facts in connexion with these outbreaks appeared to emphasise the importance of Major Gieig's discovery regarding the part played by human carriers in the spread of the disease, the actual mode of spread in affected areas does not appear to have been clearly demonstrated. In these circumstances it is obvious that preventive measures were undertaken under considerable difficulties, and it would appear that further scientific investigation is necessary to discover the exact mode of spread of certain outbreaks which, at first sight, do not appear to have been water-borne.

Smallpox—Was more prevalent than in any year since 1896, 38,687 deaths or three times the annual average number of deaths during the past 20 years being caused by this disease. The month of May, as usual, was the period of maximum intensity, and towns suffered less than villages perhaps indicating that there is even more room for an improvement in vaccination in rural than in urban areas.

Plague—Calls for little remark as the disease was fortunately less prevalent than in any year since it became widespread in the Province. In regard to anti-plague measures the Chief Plague Medical Officer has no fresh observations to make except that he believes that the disease was stamped out in some towns and many villages by means of "smoking operations". Major C E Southon, the Chief Plague Medical Officer, quotes, as an instance of the value of this measure, the case of the city of Jhelum, where a plague epidemic commenced in January 1913. He states that "smoking operations were undertaken during the height of the epidemic in order to ascertain whether an epidemic which had once taken a firm hold could be curtailed or stamped out. The operations lasted from the 25th March to the 10th May. In May, up to the 10th, there were 46 deaths, but subsequent to the completion of the operations on that date and to the end of the month there were but 12 deaths before the epidemic ceased, notwithstanding the fact that the plague history of Jhelum in former years indicates that May is usually their worst month". In view of the fact that these smoking operations, which admittedly are unable to deal with rats living in the roofs—and where in consequence "poisoned baits" are placed—have only met with equivocal success in many parts of the Punjab, or in other Provinces of India, it becomes necessary to adopt a critical attitude towards its alleged successes. And it cannot be held that the above quotation supplies altogether convincing evidence of its efficacy, for it is well known that a plague

epidemic in any given town ordinarily dies out spontaneously in the course of about two months, and it is said to be extremely rare for the disease to survive as an epidemic in the Punjab after the middle of May. In these circumstances, it might have been anticipated, that apart from all anti-plague measures, the Jhelum epidemic would have died out after over three months actively more specially when this period coincided with the normal conclusion of the plague season in the Punjab. It would indeed appear that further evidence is necessary before it can be held that the value of "smoking operations" in aborting plague epidemics has been definitely ascertained.

Fever—Under the head of "Fever," by which term malaria and an unknown proportion of other diseases are included, no less than 331,698 deaths were registered during the year.

The provincial death-rate from this cause was at the rate of 17 15 per mille of population out of a total death-rate of 30 2 per mille. Nevertheless the subject of malaria is dismissed in half a page of the report, whilst cholera, with a provincial death-rate equal to only 30 per mille of population, occupies no less than three pages.

Malaria, however, like the pooh, is always with us, and there is not unnaturally a tendency to regard it as an inevitable evil from which there is no hope of escape and little chance of finding a remedy. Nevertheless since even in "mild" year this disease is responsible for about half the total number of deaths in the Punjab it may be said to dominate the pathology of the Province. In this connexion a former Lieutenant-Governor in reviewing an earlier sanitary report remarked—

"Too much attention cannot be directed, in the opinion of the Lieutenant-Governor, to the subject of the prevalence of fever during the autumn months in this Province. The mortality under this head is so great that from cholera it becomes altogether significant when compared with it even in years of cholera epidemics,—he would again impress upon the Sanitary Commissioner the importance of continuing his strenuous exertions to reduce, or to point out the means of reducing, the death-rate from fever—which is the great scourge of the Punjab."

Intimately bound up with the question of malaria is rural sanitation, for this disease is more prevalent and causes a higher mortality in rural than in urban areas.

The subject of rural sanitation comes in for considerable notice both in the report and in recent resolutions of the Punjab Government, but it has to be recognised that immense difficulties, largely connected with the apathy and ignorance of the people, will have to be overcome before sanitation can be expected to make much headway in village communities.

The report, however, shows evidence that the difficult problems connected with both urban and rural sanitation are being tackled in a manner which may be anticipated to yield in due course

a considerable measure of success. It will, however, be a long and uphill fight in which scientific investigation, more especially in the case of epidemic diseases, such as cholera, malaria, and plague, requires to go on hand-in-hand with remedial measures. It is clear therefore that it would be a mistake to expect striking results in the immediate future.

Lieutenant-Colonel Browning Smith's interesting report, however, indicates that plans are being well and truly laid, but time, opportunity, and adequate and judicious assistance are required before sanitary science can be expected to produce its undoubted benefits under the exceptionally difficult circumstances to be met with in the Punjab.

BURMA

Lt.-Col. C. E. Williams, I.M.S., D.P.H. submitted the Burma Sanitary Report for the year 1913.

This report like all the Provincial Sanitary reports is far too statistical and omits much that would be of interest to the reader. This is largely due to the absurd decision to reduce these reports into a fixed number of pages—whereby the report can be little else than a comment on the Tables of Statistics in the Appendix. The Burma Sanitary Report is no worse, it is indeed, better than the others in this respect. The provincial birth-rate is given as 32.61 against the five-year mean of 34.2. The death-rate gives a ratio per mille of 23.58, a decided decline from 26.4 of the previous five-year mean.

Infantile Mortality is a subject which has occupied much attention in Burma. The rate for 1913 is given as 221 per mille.

In a few places special enquiries into the cause of infant mortality have been made which tend to show that a great proportion of infant deaths are attributed to "convulsions," and that tetanus is a frequent cause of mortality in new born infants. Malnutrition, diseases of the digestive system brought on in many cases no doubt by chills due to insufficient clothing and low vitality from birth, and respiratory disease, are responsible for much of the excess infant mortality. The problem is obscured by the insufficiency of the information as to the illness preceding death, and as to the age of the deceased infant. The attention of Civil Surgeons generally is being directed to this subject.

There is much inaccuracy in the return of age of the deceased even in the case of quite young children, and doubtless many infants are returned as of one year of age at the time of death and thus are not included in the lists of infant mortality, which comprise only the deaths of those under twelve months of age. It has not been possible hitherto to ascertain with any precision the death rate of young children above one year of age in the various towns of the Province, which is an enquiry of as much importance as that into infant mortality. In the future it will be possible to make a closer survey of this subject through the agency of the Assistant Health Officers who have been appointed to the charge of the towns in many of the Lower Burma Districts, including those of the Pegu and Irrawaddy Divisions and Toungoo.

The Society for the Prevention of Infantile Mortality, Mandalay, under the Presidency of Mrs. Saunders, the wife of the Commissioner, Mandalay, and the Vice-Presidency of Mr. Taw Sein Ko, K.L.H., I.S.O., and Saya

U. Maung Gyi, carried on throughout the year 1913, the good work initiated in 1912 and previous years. The Society receives a grant of Rs. 1,000 from Government and one of Rs. 300 from the Mandalay Municipality, but is otherwise dependent on private contributions to its finances. At a meeting held on the 29th March, 1913, the operations of the Society, hitherto restricted to persons of Burmese nationality, were extended to all communities, Hindu, Mahomedan, and Chinese.

The Yadanabon Maternity Hospital, founded through the zeal and charity of U Maung Gyi, was incorporated with the Society for the Prevention of Infant Mortality from the 25th November 1913, and appears to be popular and to have met a long felt want. Thirty three women underwent confinement successfully in this institution during the year. The objects of the institution are officially stated to be (a) to ameliorate the condition of poor pregnant women, (b) to introduce Western methods of midwifery, and to do away with the present irrational Burmese methods, (c) to disseminate a knowledge of Hygiene.

The founding of this hospital by a private Burmese gentleman with the assistance of his compatriots, and without any official instigation and backing, marks a new departure in the direction of the application of funds derived from private charity to the improvement of the health of the community, which is of happy augury for the future well-being of the Burmese nation.

ANTI-PLAGUE MEASURES

The policy pursued in the campaign against plague during 1913 was that prescribed by the Local Government in September 1912, and stated in paragraph 23, page 14, of my Annual Sanitary Report for that year. The measures upon which chief reliance was placed were inoculation and evacuation. Rat destruction was carried out on anything approaching an effective scale in very few places, and nowhere to an extent which could be expected to have a very marked influence upon the progress of the epidemic. In many centres where plague is annually prevalent this measure was frankly discarded as a means for the limitation of the disease. Thus in Pirome, with human population of 27,000, no more than 4,439 rats were destroyed during the year. In Ma-ubin town, where the disease appeared in epidemic form early in the year and from which returns of plague deaths were furnished for every month up to the close of 1913, the number of rats reported to have been destroyed is only 594. In Mandalay the number destroyed was only 750. On the other hand, rat destruction on a considerable scale was carried out in Rangoon (441,240), Maymyo (15,240), Myaungmya (13,142), Pyinmana (24,123). It is certain that the very partial destruction of rats can serve no useful purpose, and may tend to disseminate infection, while it involves a useless expense of public funds. Even where carried out on a considerable scale as in Rangoon and Pyinmana, where the numbers of rats destroyed approximated to 1.5 per head of the human population, it is open to doubt whether any real influence was effected by the partial measure on the spread of infection. The dictates of commonsense would, if followed, limit the destruction of rats to isolated colonies such as can be attacked and completely eradicated without interfering with the habitations of the people or causing injury to their buildings, which, under current orders of Government, is no longer permitted. It is still permissible, and is highly desirable, to exterminate rat colonies in public buildings and institutions such as markets, offices, schools, etc. It is also permissible to carry out the measure on a thorough scale on private property if the owner's consent be obtained.

It is, however, a too common experience to find the sites of markets riddled with rat burrows, and every sign of the existence of a large population of bandicoots and brown rats, both of which are well recognized to be *par excellence* the harbourers and distributors of plague infection. The opportunities for the spread of the infection

by means of the stallholders and frequenters of the markets are also a matter of common observation and knowledge, yet it has hitherto proved impracticable to get Municipal and Town Administrations generally to adopt the principle of freeing their markets from rats as a routine practice. I understand that the Mandalay Municipal Committee have, however, within the year under review, awakened to the danger of allowing such foci of plague infection to continue in the midst, and have adopted energetic measures for rat extermination throughout the Municipal markets. It is to be hoped that all such other Municipal Committees as have hitherto paid little attention to this important measure will follow their example.

The total number of rats destroyed in Burma during 1913 amount, according to the returns, to 543,655.

Inoculation—This measure has made some progress in certain towns, but is generally viewed with aversion by town populations, especially those of Lower Burma.

Enteric Fever—This disease is becoming more generally prevalent, or is more frequently recognized than heretofore. In 1913 cases were reported from Akyab, Bassein, Henzada, Myaungmya, Moulmein, Shwebo, Sagaing, Monywa, Mandalay, Kyaukse, and Pakokku towns. At Bassein enteric fever is of frequent occurrence in the town and jail, and 7 deaths were due to this cause. In the jail 11 cases of the disease were treated, and 5 in the Civil Hospital. At Henzada 14 cases were treated. At Myaungmya 4 cases occurred in the jail. The Civil Surgeon, Moulmein, reports that this disease is rife in the town, and thinks that the mortality from it is high, most cases not being diagnosed or properly treated. The prevalence of the disease in the jail is attributed to "carriers". Twenty four cases were treated by the Civil Surgeon, Sagaing. At Mandalay there was an outbreak in the town in which several Europeans were attacked, and the disease is said to occur in rural areas of the district. At Kyaukse there was an outbreak at the end of the year. The milk supply is suspected. This everywhere in the Province receives inadequate supervision, and is a standing menace to the health of all consumers.

Beri-Beri—This disease prevailed extensively in Akyab District. In Bassein Town 61 deaths were registered, mainly among Indian coolies. The disease was again prevalent in the neighbourhood of Victoria Point and in Bokpyin Township, Meigui District. In August and September a small outbreak took place at the Imperial Police Training School, Mandalay. A change was made in the rice supply, and this was followed by a cessation of the outbreak, though it cannot be said to be clearly established that this was dependent upon the nature of the diet. Many cases occurred at this period in the town, mostly among the poverty stricken classes. Although all Civil Surgeons admit that the majority of sufferers from beri-beri eat rice of doubtful quality, and that the disease is probably associated in some way with this diet, cases are frequently observed in which diet appears to play no part. Thus the Civil Surgeon, Akyab, asserts that he has treated cases of this disease in well to do persons living on a rich mixed diet, and the Civil Surgeon, Bassein, has seen the disease in Burmese villagers who do not eat milled rice, and habitually use a mixed diet which elsewhere does not lead to outbreaks of the disease.

JAIPUR ANNUAL REPORT

Major J. Fisher and Rai Bahadur Assistant Surgeon D. S. Khanka were in medical charge of the medical institutions of the Jaipuri State in 1913, the latter for one month only. Plague was endemic and the villages affected found evacuation the most satisfactory way of meeting the pest. Malaria was less prevalent, and the use of quinine freely is reported to "have marvellous effect". Cholera too prevailed.

The stone operations are usually an important part of the hospital work. There were 60 litholapaxies with 2 deaths. The largest stone, composed of lithates, weighed 587 grains, the average time for crushing was 11.9 minutes and for washing out 5.4 minutes, and the average stay in hospital after operation was only 3-4 days. In one case a stone in a male child weighing 380 grains took one hour to crush. Out of 60 stones 13 were lithates, 30 phosphates, 2 oxalates, and rest were mixed. There were also 4 suprapubic operations, one stone weighed 10 $\frac{1}{4}$ ounces and the patient made a good but slow recovery. In 60 cases lithotrite No. 5 was used twenty times, No. 12, sixteen times, other lithotrites less frequently.

There were in all 2,171 surgical operations done in the Mayo Hospital, 823 were done by Major Fisher, 573 by Assistant Surgeon Khanka, 427 by Miss L. Sykes and the rest by other members of the staff.

The Jails were healthy, Central had 7.23 per mille and District 17.9 per mille death rate.

The report is an excellent record of good work done at Jaipuri.

Correspondence.

PLAQUE PROPHYLAXIS

To The Editor of "THE INDIAN MEDICAL GAZETTE"

SIR,—During a year of work on plague duty at Mandalay in 1912 and from observation of an epidemic in Shwebo, where I was Civil Surgeon in 1913 if, I became convinced that we were attacking the plague problem from an entirely erroneous standpoint.

It is possible that our minds were obsessed with the idea of the destruction of mosquitoes for malaria prophylaxis and by a process of auto suggestion, we were led to attempt the same methods with plague. The main facts, which bear on my subsequent argument, are as follows—

(1) So long as there are plenty of live rats plague does not attack human being for the simple reason that the rat flea will not as a rule bite man unless starving.

I remember a brother officer saying that if he had to live in an infected quarter he would import rats and keep them in cages on the floors of his rooms replacing them as they died, &c., he would see that rat fleas were supplied with sufficient of their natural primum to prevent turning their attention to him.

In this fantastic suggestion there lay the germ of a really practical idea.

(2) The explanation of the eventual disappearance of plague from any locality is held to be, not that the rats die out, but that they acquire immunity, a certain percentage of rats attacked with plague recover, and pass a certain amount of immunity on to their offspring. Of this first line of descendants with a slight degree of hereditary immunity a larger percentage recover than of the first non-immune generation and so the immunity goes on rising steadily through the generations until a majority of the rats in the infected locality are immune and plague ceases.

The practical conclusion to be drawn is, not to kill rats but to help them acquire their immunity. By killing them indiscriminately we—

(a) Advance the time of commencement of the annual cold weather epidemic.

(b) Kill off many rats, who have recovered, and are founding that new immune race, on whom we rely for the eventual disappearance of plague.

(a) Plague and rat driving combined will bring the rat population so low that fleas will have to seek their food from man some time before the plague alone would do this, thus marking the annual epidemic begin sooner than it otherwise would.

(b) Rats from neighbouring uninfected quarters pour in if the food supply remains constant just as water finds its own

level, and the natural process of survival of the fittest has to begin again. How then can we help the rats?

We know that by inoculating human beings we can give them a very real protection against plague for a period of, say, six to nine months.

The questions are—

(1) Is it practical to inoculate rats?

(2) Is it any protection?

(1) In rat driving the rats are caught by hand, and it would be just as easy to inoculate them and let them go as to kill them.

The inoculation itself is perfectly simple. A dab of Iodine put on the loose skin over the abdomen and the inoculation made under the skin while a coolie holds the rat. The lobe of one ear is then snipped off so as to save the rat from undergoing a second ordeal if caught again. I found that rat would take one quarter of the adult human dose without being too ill to forage for food.

(2) Is it any protection?

That I have had no opportunity of testing. In Burma people nearly always run away from the house after a plague death. Inoculated and uninoculated rats could be placed together in cages in these houses and the point would soon be decided.

If it turns out that inoculation does definitely protect the rat, then we have to our hand a really practical and scientific way of attacking plague. One hundred coolies can daily catch at least two hundred adult rats, i.e., in one month there would be 6,000 protected rats, which in a small town of, say, 3,000 houses would practically prevent the possibility of an epidemic. In larger towns more coolies would be employed and for longer periods, 300 coolies in 3 months would furnish 50,000 odd protected rats. A standard of say three protected rats per house could be fixed. The benefit would be permanent, i.e., it is reasonable to suppose that many of the protected rats would acquire mild plague (a few might die of it just as humans do) and would transmit partial immunity to their odd spring.

Again imagine a town freshly infected, if all the surrounding quarters are promptly visited and the rats inoculated the epidemic is nipped in the bud. The infected fleas bite protected rats, who do not suffer and eventually the weather warms up and the fleas die and their bacilli with them.

In Burma at any rate this method would be tremendously helped by the people themselves, who would delight in catching rats, bringing them up for inoculation and afterwards freeing them thus acquiring merit. I can vouch for the practicability of the method. It is for others to answer the question, "Is it any protection?"

Let us remember that so long as the outer forts are held no harm can come to the city, also rats cannot object to being inoculated. The general incoherence of this article is due to the fact that I had hoped next winter to have an opportunity of testing the question, "Is it any protection," and then write at leisure, but *laissez alter visum*.

Yours, etc.,
W E NAILOR,
CAPT., I M S

October, 1914

[We invite the attention of our readers to this new idea, and ask for opinions.—ED., I M G.]

INTUSSUSCEPTION

To the Editor of "THE INDIAN MEDICAL GAZETTE"

SIR,—The following case of acute enteric intussusception is, I think, worth publication.

"Patient came to Assistant Surgeon on the evening of June 6th, 1914, suffering from severe pain in stomach and vomiting.

Patient was a mule driver, Mahomedan, aged 26. He was given an enema when some mucus and blood was passed. He was then diagnosed as a case of dysentery and given Mixt Alba every hour. I believe vomiting was very persistent and severe all day of July 10th.

I saw patient on the morning of July 8th, and was told he had dysentery. Noticing he seemed in great pain I stopped to examine his abdomen. I was told then that his bowels could not be opened, and that the diagnosis of dysentery had been made on the strength of the fact that mucus and blood was passed after the enema.

I found abdomen rigid with shifting dulness in both flanks. I diagnosed acute intussusception with commencing peritonitis, and at once had patient taken to the Cantonment Hospital for operation.

Operation 11 a.m., July 8th

A long incision downwards from level of umbilicus through right rectus sheath. Rectus displaced outwards. On opening the peritoneum a lot of watery blood and foul fluid escaped.

The whole of the large intestine was collapsed. The small intestines were very congested and distended, 14 inches of small intestine was found intussuscepted about midway between commencement of jejunum and ileo caecal valve, but rather nearer to duodeno jejunum juncture than the cecum.

On careful milking, this was completely reduced but patches of the gut were found yellow and gangrenous.

As patient's condition was fairly good and as the condition was too high up in the small intestine to make an artificial anus I decided to resect.

I resected about 16 inches, closing ends and doing a lateral anastomosis.

Towards the end of the operation the patient's condition rapidly got worse. I then found there was no infusion apparatus. I gave patient a couple of pints of warm saline per rectum and he rallied somewhat.

At end of operation I had hopes of patient rallying and gave another pint of warm saline per rectum and an injection of ergotin, but the patient died from shock half an hour after leaving the table.

Commentary.—It was unfortunate that the condition was not recognised earlier as is clear from the fact that even when I operated the gut could be reduced and that shock only came once towards end of the severe operation of primary resection. The man's life would undoubtedly have been saved had he been operated on 24 hours earlier. I could find no apparent cause for the condition.

Yours, etc.,
R F HEBBERT, M B, B S (LOND.),
CAPT., I M S

LIGATION OF BROAD PEDICLES

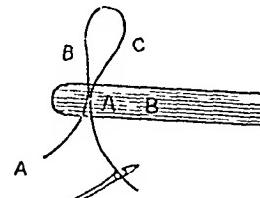
To the Editor of "THE INDIAN MEDICAL GAZETTE"

SIR,—Under the heading "A new Pedicle Suture" Lt Colonel T H Foulke describes in the August issue of the Indian Medical Gazette a form of suture devised by him. He

uses a special needle with a double slot eye near its point.

It is possible to introduce a suture identical with his "all knots" variety with the aid of an ordinary pedicle needle. The suture is applied as follows—

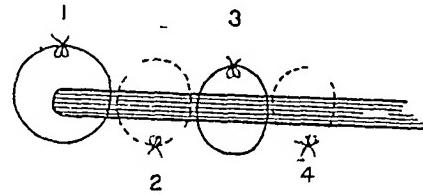
The needle is threaded and the suture material doubled so that the needle is at its middle point. The threaded needle is pushed through the pedicle at A as shown in figure and the loop caught in the finger and the needle withdrawn but left threaded. A double twist knot is now made with the free end (a) and one arm (b) of the loop and this knot pulled tight, that portion (b) of the loop which is loose is now pulled tight from the needle side and the needle, still threaded, is pushed through at B and another double twist knot made as in the first knot, etc., etc.



This method is certainly simpler than the constant hooking up and unhooking off the suture. It has however the disadvantage that it throws the pedicle into pleats "like a concertina" and leaves it like a crumpled lamp.

I think that better results can be obtained by using an interrupted suture as follows—

Thread a needle with two strands of suture material, one black and the other white and pass the suture as shown below leaving the loops loose.

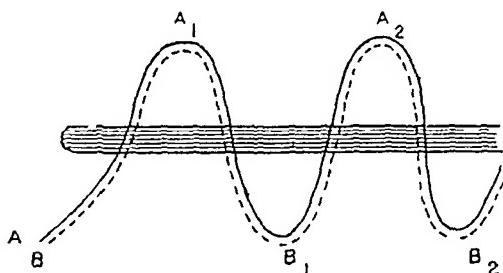


Note.—The black thread is always out on the same side, so is also the white thread on the opposite side.

Now divide the black thread at (a1) and tie stitch 1, divide thread at (a2) and tie the stitch 2, divide back

the white thread at (b1) and tie the stitch 3, divide white thread at

and tie the stitch 4, etc., etc., as shown below until the whole pedicle is dealt with



Note.—The loops are shown loose for the sake of clearness. This suture will be very quickly completed. Half an inch only of the tissue should be taken up in each loop so as to avoid dragging on the tissues. Provided vessels are not punctured in inserting the suture no troublesome haemorrhage will ensue between the stitches.

A little reflection will show that it is not necessary to have two strands but a single strand doubled up after threading will also do, though less convenient.

The advantage of this method of suturing broad pedicles is that after completing the suture the clamp can be removed and the cut end of pedicle examined for bleeding and then the serous surfaces brought together by a continuous suture burying the cut tissues and a neat broad, instead of a crumpled, pedicle left behind.

Yours, etc.,
D. JOHN,
Asst to Civil Surgeon

CHLOROFORM INHALATION IN WHOOPING COUGH

To the Editor of "THE INDIAN MEDICAL GAZETTE"

SIR,—Will you kindly give little space to the following article in your valuable journal and oblige?

Having read some years ago in "Practical Medicine" that chloroform inhalation has very good effects in abating the paroxysms of whooping cough I was anxious to try its effect. Since then I have tried it in four cases and found that chloroform inhalation produced wonderful effects in whooping cough. I had very few chances to try it because—

(a) The public not only think whooping cough to be a disease in which medicine is not to be administered, but, on the contrary, they are of opinion that medicine aggravates the symptoms of the disease.

(b) Whooping Cough is considered to be a trivial ailment by the public, but it cannot be considered to be such by medical men with a long train of complications, which increase directly or indirectly the infant mortality.

(c) Persons are generally afraid of chloroform inhalation (especially in mofussil dispensaries, where only villagers attend the medical institutions occasionally to oblige the medical officers as if it were) so much so that they sometimes refuse to get themselves operated for serious diseases simply for fear of chloroform inhalation and therefore naturally they would not allow the experiment of chloroform inhalation to be tried upon their children for a disease like whooping cough which they fear less.

(d) With all the above difficulties if there be any educated person, who regardless of the preachings of his family members, intends to give medicine to his children, would prefer some well tried mixture to chloroform anaesthesia for his children. Under no circumstances he would allow his children to have chloroform inhaled for whooping cough.

Under the circumstances I had very few occasions of trying its effects and what rare chances I had were among the non Hindoos, who keep implicit faith in Western science.

The cases in which it was tried were the following—

- 1 An Eurasian girl aged about 3
- 2 A Parsee boy aged about 4
- 3 An European boy aged about 7
- 4 My daughter who is 3 years old

I did not like to bring the children completely under its influence, but I began with Ms 5 and subsequently Ms 5 were added till, in all, Ms 20 to 30 were administered at a time according to the ages of the children and thus produced mild anaesthesia. It was inhaled for from 4 to 5 days.

The effects were wonderful. The paroxysms were few and of shorter duration. The expectoration came out easily and the children were found more jolly than before. I gave also bromides and belladonna internally but only 2 or 3 doses were given in a day.

For case No. 4 I burnt sulphur in the sleeping room during the day time (after closing the windows, ventilators, and doors) for about 2 hours and subsequently the windows &c., were kept open from 4 to 5 hours before taking the child to sleep at night.

In addition the following common things were advised to the guardians—1 Wholesome and nourishing diet to be given to the children soon after vomiting, 2 Warm clothing, 3 Fresh air (but not exposure to fresh air), and last but not the least important, 4 Isolation (This is the most important point as many mothers dread the disease the least and take their sick children into crowds to infect and kill others).

There are many better methods of treating whooping cough, but no mention is made of the above method (except some passing remarks) in many books and hence the article is sent for publication.

I remain,

Yours obediently,

SHAMBHU PRASAD, D
SUB ASS'T SURGEON,
Sanand

A SHORT NOTE ON NASHA FEVER

To the Editor of "THE INDIAN MEDICAL GAZETTE"

SIR.—A characteristic disease, so common amongst the native population in Bengal, has not, I feel, attracted as much attention as it could claim. It is purposely named "Nasha Fever" (nasha of Sanskrit origin means nose) as the people call it, and we do not find any reference in any English Text Books of medicines read in our schools and colleges and therefore it merits attention. The followers of the Ayurvedic principle of treatment appear to have been conversant with this complaint.

It is not, however, strictly correct to give this affection the designation "Nasha Fever," when the fever itself is not the characteristic feature of the disease, and it is evidently preceded by the changes in the nasal mucous membrane. At present no better nomenclature can be determined.

The chief lesion lies in the thick mucous membrane, Schneiderian, lining the nasal fossa which becomes considerably vascularised and there is immense dilatation of venous blood. The surface is red swollen, and hazy in appearance, dry, prunous, and free from discharge of any kind. The fever ushers in within 24 hours, the temperature ranging from 99° to 102°. Malaise, backache, neckache, constricted pupil (occasional), feeling of heat and fullness about the head and the affected region on the specialties.

Duration—Short and uneventful the course that ordinarily lasts 3 or 4 days, sometimes longer.

Prognosis—Favourable.

Age and Sex—Both sexes are liable. Age is not the determining factor in tracing out the cause. But children are less affected.

Time, occupation, and diet—have no special bearings on the disease.

Treatment—The trouble disappears as it comes without any active interference in majority of cases. But the cure may be hastened by diminishing engorgement and tension of the vessels by puncturing them with a common needle, and a simple purgation. Pulv. Dovers in 10 gr. dose with 5 grain of Phenacetin once at bedtime affords great relief.

Now the principal point that remains undissolved is how the disease is originated. Is it merely a local affection due to the cerebral congestion of the mucous membrane of the nasal fossa beneath which there is a collection of veins forming a close network or there is some other cause not definitely known to us. In absence of the record of the pathological changes occurred on the affected part, the cause cannot be determined. Some, however, are inclined to attribute it to malarial spleen and congested liver, but this theory may safely be eliminated so long Quinine and Arsenic prove abortive to prevent it or control its progress, besides men of sound constitution free from malarial taint are equally liable. A few contemplate bacterial origin which bears no test of scrutiny as there is absence of signs caused by a bacterium. The part never suppurates nor ulcerates. Heredity is sometimes claimed by some. I have come across two cases in which family influence prevailed. But this is not a general case. Others attribute it to the localised cerebral congestion. No one is prepared to accept this theory without reserve as other prominent and distinct symptoms might be noticed in case the brain was involved. This appears to be quite an independent ailment attacking a patient direct.

The disease is certainly a simple and innocent one that admits no doubt, but when it is a distinct complaint, the cause needs to be ascertained. I hope your esteemed readers will record their experiences in the journal and sufficient light be thrown to arrive at the correct conclusion as far as its etiology is concerned.

SATKARI GANGULI,
Sub Assistant Surgeon

[How does Nasha Fever differ from the cosmopolitan "cold in the head"? ED.—I M G.]

LITERARY AND THERAPEUTIC NOTICES

THE Indian publishers and agents for the second edition of Lieutenant Colonel R. H. Elliot's book on *Selcio cornual Thephining* are Messrs Butterworth & Co (India), Limited, Hastings Street, Calcutta.

Messrs Watson and Sons (313, High Holborn, London, E.C.), point out that many orders have been directed to them owing to the war and their new catalogue will be found well worth reading. All microscope accessories, except a few articles made of glass, are available.

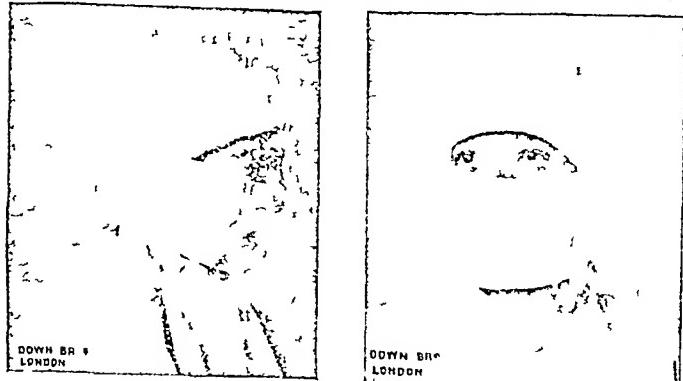
The war should lead to a revival of cheap glass manufactures in England and India. Much of the cheap glass on sale comes from Austria, for example, the neat little tubes for holding "treatments" of quinine tablets are not obtainable. The Jail Department, Bengal, has sufficient probably for the supply to Bengal, Bihar and Orissa, and Assam, but only for the current malarial season. There are several glass factories in India which should now try to seize the opportunity offered.

"PNEUMOSAN"

To dispel any misapprehension that may exist as to the proprietorship of "The Pneumosan Chemische Fabrik," we beg to announce that this concern was founded some four years ago by Mr A. Newton, its present proprietor, a British subject, and that no foreigner of any nationality has had, or has at present, the slightest interest in it. The concern will henceforth be carried on under the style of "The Pneumosan Company." We also wish it to be known that "Pneumosan" is a British Product and that in its manufacture only British labour is used. The Laboratory processes are under the control of A. U. Newton, B.Sc. (London), F.C.S.

Messrs Southall Bros and Buckley, Limited, of Birmingham, have put on the market VITAFER, which is composed of milk proteins, milk fat, and glycerophosphates of Cr, Mg and Na. The factory is in the west of Ireland. It is well supported by medical testimonies.

COMBINED OPERATION CAP AND MASK



The above illustration represents a form of Combined Cap and Mask, suggested by Major E. J. O'Meara, I.M.S.

It will be found exceedingly convenient in practice. It is made in one piece and is adjusted in the following manner:

After putting the cap on the head, the long tail piece is passed across the face and fastened by buttons behind.

The advantages claimed are—

(1) more comfortable, no dragging on the ears,
(2) it is fastened by buttons and therefore more easily secured,

(3) there is a slit in the cap behind which ensures the cap fitting accurately when the mask is pulled across the face.

The makers are Messrs Down Bros, Ltd., 21 & 23, St Thomas's Street, London, S.E.

Service Notes.

THE first I.M.S. casualties at the War are as follows—
Invalided from the front Major E. H. Stanley and Major M. MacWatters, I.M.S.
Wounded Slightly—Capt. A. E. Grisewood, I.M.S., Lieut. N. M. Mehta, missing, and No. 1054, 2nd class, Sub Asst. Surg. Ishwari Dutt, wounded.

Up to the end of October about 220 I.M.S. officers in civil employ had been recalled to military duty.

SURGEON GENERAL SIR ANNASTRY CHARLES CASTRIOT DE RINZY, Bengal Medical Service retired died at Ealing on 24th September 1914. He was born on 7th April 1828 the son of Dr Thomas De Rynzy of Cuneo, County Wicklow, educated at Trinity College, Dublin, where he took the B.A., taking also the M.R.C.S. in 1851, and entered the I.M.S. as Assistant Surgeon on 29th July 1851. He became Surgeon on 12th March 1864, Surgeon Major on 29th July 1871, and was promoted to Deputy Surgeon General on 12th November 1877, retiring on 9th December 1882. In 1868 he was appointed the first Sanitary Commissioner of the Punjab. He served in Burma in 1852-54 with the 2nd and 3rd companies of the fifth Battalion, Bengal Artillery, and was present in the action of Martaban, Rangoon, and Prome, receiving the medal with clasp, in the Indian Mutiny, at Nasirabad, in Rajputana, whence he escaped alone to Beawar, and in the siege of Lucknow, medal with clasp, and on the North East Frontier of India in the Nagi Campaign of 1879-80, when he was mentioned in despatches, and received the medal, and the C.B. from 22nd February 1881. On 14th January 1882 he received a good service pension, and on 27th June 1902 was made a K.C.B. He was the author of pamphlets *On the Sanitary State of the British troops in Northern India*, London, 1893, and *Remarks on the report of the Sanitary Commissioner on the cholera epidemic of 1872 in Northern India*, Lahore, 1874. After his retirement for many years he filled the post of Chairman of the Jokai Tea Company, which presented him with his portrait.

SURGEON MAJOR ALFRED FRANCIS MACLEOD, Madras Medical Service, retired, died on 20th August 1914. He was born at San Thomé, Madras, on 4th February 1819, the son of Surgeon General John Macleod also of the Madras Medical Service, who was born in 1781, entered the service in 1803 and died at Chimp de Muq Mauritius while holding the post of Surgeon General, on 19th August 1846. He took the M.R.C.S. in 1810 subsequently also the L.K.Q.C.P. in 1861, the M.R.C.P. London in 1861, and the F.R.C.S. England in 1865. He entered the I.M.S. as Assistant-Surgeon on 8th March 1841, being nominated by Sir James Low Lushington, G.C.B., and landed at Madras on 4th July 1841. After serving with the 2nd Battalion Artillery, and 15th Hussars, he fell ill, and had to take three months' sick leave from 20th September 1843 going to Europe on sick certificate on 1st January 1844, and being absent five years, not reaching Madras again till 19th December 1848, when he was posted to the 43rd N.I. He was transferred to the 6th Light Cavalry on 29th January 1853. During the Mutiny he served in Upper India with the 59th N.I., and was appointed Civil Surgeon of Fitchpu, in the U.P., on 7th November 1857. On 26th October 1859 he was promoted to Surgeon, with 18½ years' service. The remainder of his service was spent in military employ, with the 47th N.I., the 102nd Fusiliers, the 2nd Light Cavalry, and the 2nd N.I. successively. On 8th March 1861 he became Surgeon Major, in 1873 he acted as Deputy Surgeon General of the Hyderabad Subsidiary Force, and on 26th February 1874 he retired, over forty years ago. For many years past he had been the senior man on the Madras retired list, the next senior, Surgeon Major W.H. Harris, being twelve years his junior. The lives of father and son together cover over 140 years. There is, however, still one Bengal man senior to him, the centenarian H.B. Hinton, whose name still appears in the Army List.

SURGEON MAJOR WILLIAM HENRY HAYES, Bengal Medical Service, retired, died at Farnham, Surrey, on 8th September 1914, aged 80. He was born on 27th November 1833, took the M.R.C.S. in 1855, and entered the I.M.S. as Assistant Surgeon on 4th August 1855, the last of a very large batch. He became Surgeon on 4th August 1867, Surgeon-Major on 1st July 1873, and retired on 16th April 1878. He served in the Indian Mutiny, in Chota Nagpur, and was wounded in a skirmish near Chaibasa on 14th January 1858. After the Mutiny he entered the Bengal Commission, and in which he held till his retirement. He was the last survivor of the few officers of the I.M.S. who were employed in the various Commissions as "military civilians," in purely magisterial work. Indeed, the Bengal Commission itself has been, to all practical purposes, extinct, for some twenty years past, no military civilians having served in the province for many years, and the "non-regulation" districts being now staffed entirely by the Civil Service.

CAPTAIN ROBERT LONG GAMLEN, I.M.S., has been placed on the retired list, on account of ill health, from 28th August 1914. He was born on 2nd March 1881, educated at Cambridge and St. Thomas', and took the M.R.C.S. and L.R.

C P, London, in 1906, the M B, B C and B A, Cambridge, in 1908. Entering the I M S as Lieutenant on 1st August 1903, he became Captain on 1st August 1911, and was placed on temporary half pay on 24th November 1913, when he had been on sick leave for nearly two years. He had no war service.

LIEUTENANT COLONEL GEORGE FRANCIS WILLIAM EWENS, Bengal Medical Service died of *angina pectoris* at Lahore on 9th September 1914. He was born on 14th April 1861, and educated at King's College, London, took the L S A in 1885, the M R C S and L R C P, London, in 1886, the M B in 1886, and the M D in 1888 at the Royal University Ireland, and the D P H Cambridge in 1888, and entered the I M S as Surgeon Captain on 28th July 1891, becoming Major on 28th July 1903, and Lieutenant Colonel on 28th July 1911. The *Army List* assigns him no war service. For many years past he had been Superintendent of the Lahore Lunatic Asylum, and was the author of a work, *Insanity in India*, published in Calcutta by Thacker, Spink & Co, in 1908.

LIEUTENANT COLONEL HERBERT WILSON PILGRIM, Bengal Medical Service, retired, died suddenly at Brighton, on 1st October 1914, only four months after his retirement. A full notice of his career in India was published, after his retirement, in the *Gazette* for July 1914 (p 291).

THE India Office has proposed, and the War Office has agreed, to the organisation of an Indian Field Ambulance Corps, for service on the Continent with the Indian contingent, officered and manned by Indian medical men and students now in England. This corps was started in August, under the auspices of the London University Officers' Training Corps, Dr James Cantlie acting as instructor trainee, and in the end of September Lieutenant Colonel R J Baker, Bombay Medical Service, retired, was appointed Commandant. The strength of the Corps for service was fixed at ten medical officers, with 50 men, to serve as nursing orderlies, dressers, compounders, &c. But the numbers enrolled will probably be much larger, many more men being trained in order to fill vacancies caused by casualties.

THE *Times* of 16th September reported that Dr T P Fraser, of the West African Medical Staff, had been killed in the fighting in the Cameroons. The only medical man with this name and initials shewn in the *Medical Directory* for 1914 is Thomas Peppé Fraser, of Aberdeen, who took the M B and Ch B at Aberdeen in 1901, and the D P H Cambridge in 1912. The same work shews as a member of the West African Medical Staff Dr Matthew William Fraser, who took the M B and Ch B at Glasgow in 1900, and was serving in the Gold Coast.

After several short lists of casualties, in which appeared the names of no medical officers, the *Times* of 17th September contained a list of 62 viz, 12 killed, 45 wounded, 5 missing. Among the wounded was Captain George Richard Painton, RAMC. He is a London Hospital man, took the M R C S, and L R C P in 1904, entered as Lieutenant on 30th July 1904, and became Captain on 28th January 1908. He was recently stationed at the RAMC College, and had no previous war service.

On 18th September it was reported that Lieutenant H J S Shields, RAMC, had rejoined his regiment, the Irish Guards, and that the following officers of No 4 Field Ambulance, previously reported missing, were alive and well, as prisoners, Major P H Collingwood, Captains J P Lynch and A A Sutcliff, Lieutenants A J Brown, S M Hatteley, H W Hills, C L Lander, and L M Routh. To these were added next day the names of Captain A C Vidal and Lieutenant P P Butler.

Another casualty list in the *Times* of 20th September gave the names of 21 officers killed, 46 wounded, and one missing, including the following RAMC officers —

Killed—Captain F Forrest
Wounded—Lieutenant Colonel C Dalton and Lieutenant E J Wyley

At the same time the names of Major W B Fly and Captain W K Beirn, of the RAMC were given as prisoners, while it was stated that Major F S Irvine and Captain P Dwyer, formerly reported as missing, had rejoined.

CAPTAIN FRANK FORREST was educated at Mews College, Manchester, took the M R C S and the L R C P, London, in 1904, and, after serving as Assistant House Surgeon of the North Staffordshire Royal Infirmary and Eye Hospital, entered the army as Lieutenant on 30th January 1906, becoming Captain on 30th July 1909. He had no previous war service. His last station was the RAMC College.

He was a well known tournament lawn tennis player. Curiously, Captain Forrest stands in the *Army List* next to one place above, that of Captain A S Williams, the first medical officer reported as killed (See below).

LIEUTENANT COLONEL CHARLES DALTON was educated at the Carmichael College, Dublin, took the L R C P I and L R C S I, in 1888, and entered the army as Surgeon on 31st January 1891, becoming Major on 31st January 1903, and Lieutenant Colonel on 7th May 1913. His last station was Dublin, where he was Deputy Assistant Director of Medical Services. He had a long record of war service, as follows: Burma, 1893, in the Kachin Hills, medal with clasp; North West Frontier of India, 1897-98, on the Malakand, and action at Lindikui, medal with clasp; Siem Leon, 1898-99, Kirene expedition, mentioned in Despatches in the *London Gazette* of 29th December 1899, medal with clasp; and South Africa, 1899-1900, where he was employed as Special Service Officer and took part in the operations in Natal, including the relief of Ladysmith, and the fighting from 17th to 24th January 1900, being severely wounded on 23rd January, in the operations in the Orange Free State from February to May 1900, including the actions at Houtnek (Theba Mountain), Vallivier and Zandvlei, and in Cape Colony, was mentioned in Despatches in the *London Gazette* of 8th February 1901, and received the Queen's medal with three clasps. He also holds the Albert medal and the Royal Humane Society's medal for saving life.

LIEUTENANT EDWIN JOSEPH WEYLER was educated at the London hospital, and took the M R C S and L R C P, London in 1906, the M B, B S, London in the same year, and the M D in 1909. After serving in South Nigeria, on the West African Medical Staff, he got a temporary commission as Lieutenant in the RAMC in August 1914.

MAJOR WALTER BURGESS FLY is a St Thomas' man. He took the M R C S and L R C P, London, in 1900, entered as Lieutenant on 21st June 1900, becoming Captain on 21st June 1903, and Major on 21st December 1911. His last station was Woolwich. He had no previous war service.

CAPTAIN WINIFRED KEESLY BLAMAN was educated at Charing Cross, took the M R C S and L R C P, London, in 1906, entered as Lieutenant on 30th July 1906, and became Captain on 28th July 1910. He was stationed at Malta, and had no previous war service.

The *Times* of 23rd September gave another list of casualties, 71 in number, 12 officers killed, 44 wounded, and 15 missing. One medical officer was shewn as missing, Captain Edward Meredith Middleton, RAMC. He is a Canadian, was educated at Toronto University and at St Thomas', took the M B at Toronto in 1905, the M R C S and L R C P, London, in 1906, and entered as Lieutenant on 28th January 1907, becoming Captain on 28th July 1910. He was stationed in the Eastern Command, and had no previous war service. Subsequently it was stated that he was a prisoner of war.

At the same time several corrections of previous lists were given. Captain A S Williams, reported on 10th September as killed in action, is alive and a prisoner at Brunswick. Captain M Leekie, reported as wounded, is also missing. Captain P C T Davy, reported as missing, is a prisoner. Captain Wright Mitchell is also reported as a prisoner. He was educated at Trinity College, Dublin, where he took the B A in 1903, the M B, B Ch, and B A O in 1904, and entered as Lieutenant on 30th July 1906, becoming Captain on 30th January 1910. He was recently stationed at Ambala, and had no previous war service.

THE *Times* of 23rd September also published a report by the Admiralty that three British cruisers, the *Aboukir*, *Cressy*, and *Hague*, had been torpedoed and sunk by German submarines, off the coast of Holland. The crews of the three vessels were in all about 2,000 strong, and about 1,200 appear to have been lost. The *Aboukir* was struck first, the other two, thinking that she had struck a floating mine, came up to try and save her crew, and were both torpedoed while stationary. On board the three vessels were seven medical officers, five of whom have been saved, and two Surgeons H J Hopps and A E Turnbull, lost, both Edinburgh men.

ABOUKIR—Fleet-Surgeon O Rees Surgeon H J Hopps

CRESSY—Staff Surgeon E C Swdy, Surgeon A E Turnbull, R N V R, and temporary Surgeon G N Martin

HAGUE—Staff Surgeon Percival T Nicholls and Surgeon L C D Irvine, R N V R

FLEET SURGEON OSWALD REES took the M B, C M, at Glasgow in 1889, the M D in 1894. He attained his present rank on 15th May 1911, and joined his ship in August 1914. He has gained the Blane medal.

SURGEON HUGH JAMES HOPPS took the M B, Ch B, at Edinburgh in 1911, and entered the Navy on 3rd October 1913, joining his ship in August 1914.

STAFF SURGEON EDWARD CHARLES SAWDY was a St Mary's man, took the M R C S and L R C P, London, in 1895, and joined the Navy in the same year, attaining his present rank on 8th November 1906. He joined his ship on 1st January 1914.

SURGEON ALFRED E TURNBULL, Royal Naval Volunteer Reserve, took the M B, CH B at Edinburgh in 1897. He was in practice at Faringdon, in Berkshire, and was called up from service in the war, joining his ship on 1st August 1914.

TEMPORARY SURGEON GERALD NOEL MARTIN joined the *Cressy* on 1st August 1914. His name is not in the *Medical Directory*, so presumably he must have qualified during the present year.

STAFF SURGEON PERCIVAL T NICHOLLS was at Middlesex Hospital. He took the M R C S and L R C P, London, in 1900, entered the Navy in the following year, attained his present rank on 10th August 1909, and joined his ship on 1st August 1914. He also is a holder of the Blane medal.

SURGEON LEONARD COCKBURN DUNDAS LAUDER, Royal Naval Volunteer Reserve, was at Cambridge and Guy's. He took the B A at Cambridge, the M R C S and L R C P, London, in 1911, and was in practice at Chesham Bois, Buckinghamshire, till called up to serve in the war, when he joined his ship on 1st August 1914.

THE casualty lists in the *Times* of 24th September gave the names of 80 officers, followed by 33 more on the 25th, killed 36, wounded 71, missing 6. No less than 4 officers of the R A M C were included among the deaths. Lieutenant Colonel C Dalton reported as wounded a few days before, died of his wounds, while Captain T Scatchard and Lieutenants A K Armstrong and J H Huggan were killed in action. Captain G A Kempthorne and Lieutenants G R Walker were reported as missing. It was also notified that Captain H J M Perly, formerly reported wounded, and Lieutenant J L Lauder, formerly reported missing, were prisoners of war.

CAPTAIN THOMAS SCATCHARD was the youngest son of Dr. and Mrs. Scatchard, of Bolton Spa, Yorkshire. He was educated at Leeds, and, after taking the L S A in 1902, filled the posts of House Physician of Leeds Infirmary, and House Surgeon of the Beckett Hospital, Barnsley. He gained his commission as Lieutenant on 31st January 1909, becoming Captain on 31st January 1909. He was recently stationed at Aldershot, and had no previous war service.

LIEUTENANT JAMES LAIDLAW HUGGAN took the M B and CH B at Edinburgh in 1911, and entered the army on 26th July 1912. He was recently stationed in London. He was a Scottish Rugby International football player. He was serving with the Coldstream Guards.

LIEUTENANT ARTHUR KEITH ARMSTRONG took the M R C S and L R C P, London, in 1907. He received a temporary commission as Lieutenant in August 1914. He was Honorary Medical Officer of Monmouth Hospital.

CAPTAIN GERARD AINSLIE KEMPTHORNE was educated at Cambridge and at St Thomas', taking the B A, Cantab., the D P H of the London Colleges in 1913. Entering the army as Lieutenant on 31st August 1903, he became Captain on 28th February 1907. He was lately stationed at Tregantle, and had no previous war service.

LIEUTENANT G R WALKER cannot be identified from the *Army List*. Dr Ernest R Walker got a temporary commission as Lieutenant in August, the initials may be mistaken.

LIEUTENANT JAMES L F LAUDER also got a temporary commission as Lieutenant in August. His initials were previously wrongly given as C L Lauder.

THE *Times* of 26th and 27th September gave further casualty lists including the names of 39 officers killed, 64 wounded, and 17 missing, total 120. The following medical officers were among the number:

Killed—Lieutenants H L Hopkins and J F O'Connell.

Wounded—Captain B H V Dunbar and Lieut R Fisher. Missing—Captains G Field, M P Leahy, and G H Stevenson, and Lieutenant F L Tulloch.

It was also stated that Colonel H N Thompson, R A M C, reported as missing in the first casualty list on 1st September, was a prisoner of war.

LIEUTENANT HERBERT LESLIE HOPKINS was a Guy's man. He took the M B and B S, London, in 1911, and the M D in State Medicine in 1914, and went into practice at Bury St Edmunds, Suffolk, after filling the posts of House Physician at the Royal Infirmary, Derby, and the City of London Hospital for Diseases of the Chest. He was Assistant County Medical Officer of Health and Tuberculosis Officer for west Suffolk, and received a temporary commission as Lieutenant in the R A M C on 15th August 1914.

LIEUTENANT JOHN FORBES O'CONNELL was educated at St Mary's, where he filled the post of House Physician. He took the L M S, S A and the M B, B S, London, in 1912, and entered the army on 24th July 1913. He was recently stationed at Aldershot. He was the elder son of Lieutenant Colonel D. V. O'Connell, R A M C, retired, and was Vice Captain of the London Welsh Football Club last year.

CAPTAIN BENJAMIN HOWARD VILLA DUNBAR was educated at Leeds, where he filled the position of House Physician of the Leeds General Infirmary. He took the M B and CH B at Leeds in 1902, entered the army as Lieutenant on 31st January 1903, and became Captain on 31st July 1906. He was recently stationed at Belfast, and had no previous war service.

LIEUTENANT RICHARD FISHER was at St George's where he had served as House Surgeon and Physician. He took the M R C S and L R C P, London, in 1909, the M B and CH B at Cambridge in 1913, and was appointed Lieutenant in the R A M C Reserve on 27th March 1914.

CAPTAIN STEPHEN FIELD was at St Mary's, took the M R C S and L R C P, London, in 1908, and got his commission as Lieutenant on 28th January 1907, becoming Captain on 28th July 1910. His last station was Jamaica. He had no previous war service.

CAPTAIN MICHAEL PATRICK LEAHY was at Trinity College, Dublin, where he took the M B, B C, and B A O in 1906, got his first commission on 28th January 1907, and became Captain on 28th July 1910. He was recently at the R A M C College, and had seen no previous war service.

CAPTAIN GERALD HARRY STEVENSON was at Queen's College, Belfast, took the M B, B C, and B A O of the Royal University, Ireland in 1904, and entered the army on 30th July 1906, becoming Captain on 30th January 1910. He was lately at the R A M C College. This was his first war service.

LIEUTENANT FREDERICK LIVINGSTON TULLOCH took the M B and CH B at Edinburgh, in 1911. He was Medical Officer of the Dudley Road Infirmary, Birmingham, and got his commission as Lieutenant in the R A M C, Reserve, on 16th June 1913.

THE *Times* of 29th September give a short list of 38 casualties, 8 killed, 22 wounded, and 8 missing, not including any medical officers. It was, however, stated that Captain C W Holden, R A M C, formerly reported as wounded, was missing, and that Major J H Brunskill, R A M C, formerly reported missing, was a prisoner of war.

Two short lists were published in the *Times* of 30th September and 1st October, giving the names of 40 officers, 14 killed, 21 wounded, and two missing. Captain H S Ranken, R A M C, was reported to have died of wounds. Captain C T Edmonds, R A M C, reported as missing on 5th September, was now stated to be wounded, while 4 medical officers, Captain H C Hildreth, Lieutenants J H Bell, F L Tulloch, and E R Walker, formerly reported as missing, had rejoined.

CAPTAIN HARRY SHAWOOD RANKEN was the elder son of the Rev. Henry Ranken, of Irvine, Ayrshire, and was born in 1883. He was educated at Anderson's College, Glasgow, and at Glasgow University, where he took the M B and CH B in 1905, subsequently also the M R C P, London, in 1915. After qualifying he served as House Surgeon in the Western Infirmary, Glasgow, and as Assistant Medical Officer of the Brook Fever Hospital. He entered the R A M C on 30th January 1909, and became Captain on 30th July 1912. He had no previous war service. He was recently serving in the Egyptian Army, where he was member of the Sudan Sleeping Sickness Commission, and, along with Dr H L Plummer and Captain F J, compiled a series of *Reports on the Experimental Treatment of Trypanosomiasis*, published in the Proceedings of the Society for 1910-11.

LIEUTENANT ERNEST RONALD WALKER took the M R C S and L R C P, London, in 1901, and received a temporary commission as Lieutenant in August 1914. In the casualty list of 24th September he was reported missing, under the name of G R Walker.

IN the *Times* of 3rd October 41 more casualties were reported, 12 officers killed, 26 wounded, and 3 missing. Among them were 3 officers of the R A M C, Lieutenants W O W Ball and J Crockett killed, and R A Flood missing.

LIEUTENANT WILLIAM ORMSBY WYNNDHAM BALL was educated at Dublin where he took the M B, B C, and B A O in 1912, and got his first commission on 24th January 1913. He was recently stationed at Aldershot.

LIEUTENANT JOHN CROCKETT, whose name stood next below that of Ball in the *Army List*, took the M B and

B.C.H. at Edinburgh in 1906, and after serving as House Surgeon in the Royal Infirmary, Chalmers Hospital, and Royal Hospital for sick children all in Edinburgh successively, entered the army on 24th January 1913. He was recently stationed in Edinburgh. He was the only son of Mr. William Crockett, of Balmaglo, Galloway, head master of the Sciences Public School, Edinburgh, and a nephew of the late Mr. S. R. Crockett, the well known novelist.

LIEUTENANT ROBERT ALFRED FROST took the M.B., B.C.H., and B.A.O. at Dublin in 1912, and entered the army on 26th July 1912. He was recently stationed at Woolwich.

The casualty lists from the 5th to the 9th October, inclusive, as published in the *Times*, included the names of 100 officers, 25 killed and died of wounds, 47 wounded, and 28 missing. No medical officers are among them.

Two things are noticeable in the casualty lists. First, a good many of those first reported as killed have turned up again alive or have been reported as prisoners, mostly wounded. Second, the great preponderance of junior officers among the killed, up to 9th October the R.A.M.C. had lost 10 officers killed, 1 Lt. Colonel, 3 Captains, and six Lieutenants, 2 of whom had only joined the army in August.

A NAVAL DIVISION, composed chiefly of newly raised naval volunteers, some 8,000 strong, was sent to take part in the defence of Antwerp, a few days before that city fell on 8th October. They took a prominent part in the defence of the fortress during the last few days of the siege, and sustained a loss of some 300 killed and wounded, including two officers killed. Unfortunately, during the evacuation of Antwerp the greater part of the first brigade, some 2,000 men crossed the Dutch frontier, along with a much larger body of Belgian troops, and of course had to lay down their arms and were interned for the remainder of the war. Among them was a medical officer of the third or "Hawke" battalion.

SURGEON BASIL ALFRID PLAYNE was educated at Cambridge and Barts, took the B.A., Cantab, in 1907, the M.B. and B.C. in 1912, also the M.R.C.S. and L.R.C.P. London, in 1910. After serving as senior house surgeon of the Miller General Hospital, Greenwich he went into practice at Torquay, till he recently joined the Naval Volunteer Division.

The casualty lists in the *Times* for the eight days from the 10th to the 17th October were comparatively small, amounting to 73 in all, viz. 20 officers killed, 47 wounded, six missing. The only medical officer whose name appears in the list is Captain A. D. Fraser, R.A.M.C., reported missing on 17th October. During the week it was also stated that a number of officers, previously reported as missing, were now known to be prisoners. Among them were eight medical officers—Captain G. A. Komphorne (21st September also wounded), Captain H. B. Kelly (5th Sept.), Capt. E. S. B. Hamilton, (10th Sept.), Capt. J. H. Graham (4th Sept.), Capt. G. H. Stevenson (26th Sept.), Major H. W. Long (4th Sept.), Capt. R. J. Cahill (1st Sept.), and Capt. W. I. Thompson. The name of the last mentioned does not seem to have been reported before.

CAPTAIN ALFRED DONALD FRASER was educated at Aberdeen, where he took the M.B. and Ch.B. in 1906, got his commission as Lieutenant on 28th January 1907, and became Captain on 28th July 1910. He was recently stationed at Netley.

CAPTAIN WILLIAM IRWIN THOMPSON was educated at Trinity College, Dublin, where he took the M.B., B.C.H., and B.A.O. in 1905, entered the army as Lieutenant on 30th July 1906 and became Captain on 30th January 1910. He was recently stationed at Aldershot.

The third class cruiser *Hawke* was torpedoed by a German submarine on 15th October, with a loss of over 400 lives. Only one officer appears to have escaped, and among those lost are three medical officers. The *Hawke* was much heard of three years ago on account of her collision, on 20th September 1911, with the White Star liner *Olympic* in the Solent.

STAFF SURGEON GEORGE CHARLES CUMBERLAND ROSS was educated at Trinity College, Dublin, where he took the B.A. in 1897, the M.B., B.C.H., and B.A.O. in 1899. He entered the Navy in 1901, became Staff Surgeon on 11th August 1909, and joined his ship on 1st August 1914.

SURGEON GULFAYUS WILLIAM MUSGRAVE CUSTANCE was educated at St. Thomas' took the M.R.C.S. and L.R.C.P., London, in 1907, and entered the Navy on 12th May 1908, joining the ship on 15th July.

TEMPORARY SURGEON JAMES HENRY DICKY WATSON was 23 years old. He was the son of Engineer Captain Watson, R.N., now stationed in Devonport Dockyard. He was

educated at Edinburgh Academy, Edinburgh University King's School, Canterbury, and London Hospital, and had only just qualified as M.B., B.C.H. at Edinburgh, entering the Navy and joining his ship in August. He is the well known Blackheath and London Hospital football player, who distinguished himself as much in the English fifteen at three quarters in last year's Rugby international matches.

Rugby international football players have given their lives freely in the war. Up to date, besides Surgeon J. H. D. Watson, there have fallen Lieutenant J. L. Huggan R.A.M.C., Second Lieutenant R. F. Simpson, R.A., and Lieutenant Gaston Line, who had represented France in some fourteen international matches.

DESPATCHES

In the *Times* of 19th October were published two more despatches from Field Marshal Sir John French, commanding the British Expeditionary Force in France, the first dated 17th September, describing the battle of the Marne, and the second dated 8th October, describing the battle of the Aisne. Sir John's first despatch, which gave an account of the fighting near and retirement from Mons, was dated 7th September. Appended to these two despatches is a list of officers specially mentioned for good service in these three actions, or rather in the whole course of the war up to 8th October. The list is a long one, filling a whole page, six columns of the *Times*. Doubtless, where all have done so well, the difficulty was to select some rather than others.

The lists include the names of 67 officers of the R.A.M.C., of which 31 are given under the head of General Headquarters Staff, five under individual regiments, and 32 under the head of R.A.M.C. The name of one officer, Captain M. Leckie, is given twice over, perhaps by mistake.

GENERAL HEAD QUARTERS STAFF

SURGEON GENERAL T. P. WOODHOUSE

COLONELS E. H. LANDIN BILL, S. Hickson, T. J. O'Donnell, DSO, R. Porter, R. H. S. Sawyer

LIEUTENANT-COLONELS J. H. BARNFOOT, W. W. Bevondge, DSO, G. Chico, S. F. Clark, C. Dalton (killed), J. J. Russell

MATROTS M. H. BABINGTON, E. A. Bourke, B. B. Burke, A. Chopping, S. L. Cummings, M. H. G. Hell, J. V. Forrest, J. S. Gallo, G. A. Moore, G. D. Myles, E. Ryan, A. B. Smallman, E. B. Steel, F. A. Symonds, A. H. Waring, A. L. A. Webb

CAPTAIN A. C. AMY

PRINCIPAL MATRON MISS E. M. McCARTHY

3rd Battalion, Coldstream Guards, Lieutenant J. L. Huggan, RAMC (killed)

1st Battalion, Northumberland Fusiliers, Captain M. Leckie, RAMC

1st Battalion, Lincoln Regiment, Captain G. A. Kempton, RAMC

1st Battalion, King's Royal Rifle Corps, Captain H. S. Ranken, RAMC (killed)

2nd Battalion, Royal Irish Regiment, Captain S. E. Lewis, RAMC

R. A. M. C.

LIEUTENANT-COLONELS L. A. MITCHELL, J. G. Morgan MAJORS E. T. F. BIRKILL, S. G. Bullock, R. V. Cowey, H. Enys, DSO, T. E. Fielding, R. L. V. Foster, T. H. J. Goodwin, DSO, J. G. Glech, H. A. Hingo, O. W. Lloyd, C. W. Proctor

CAPTAINS E. D. CADDELL, E. L. Lithbury, M. Leckie, J. T. McEntee, W. N. Nimmo (attached 1st Battalion, Loyal North Lancashire Regiment), C. P. O'Brien Butler (attached 5th Lancs), A. C. Osborn, F. C. Sampson, H. Stewart, G. W. Ware, J. F. Murphy (Special Reserve)

LIEUTENANTS L. G. BOURNILLION, R. V. Dolbey, C. Hausinger (Special Reserve), O. Helm, H. L. Hopkins (Civil Surgeon, killed), W. M. Howells, R. A. Preston, E. Wyler (Civil Surgeon)

Also 35 N.C.O.'s and men of the R.A.M.C.

The lists of casualties published in the *Times* of 19th, 20th and 21st October were considerably longer than those of the preceding week, and included the names of 35 officers killed, 51 wounded, and 7 missing. Among those reported as killed on the 19th was Major General H. I. W. Hamilton, CB, the second General to fall, the first having been Brigadier General Lindlay, CB, of the Artillery. No medical officers were included among the casualties, the only one whose name was mentioned was Captain T. B. Moriarty, who was said to have been reported missing, but to have rejoined. His name does not appear to have been mentioned before.

CAPTAIN THOMAS BITTERSWORTH MORIARTY was educated in the Royal College of Surgeons School in Dublin, took the L.R.C.P. and L.R.C.P.I. in 1901, entered the army as Lieutenant on 31st July 1905, and became Captain on 31st January, 1909. He was recently stationed at the R.A.M.C. College.

Dec, 1914.]

SERVICE NOTES

THE British Medical Journal of 17th October gives the names of a number of medical men serving in the 5th (Dumfries and Galloway) Battalion (Territorial) of the King's Own Scottish Borderers, the old 25th Foot. The battalion is commanded by Lieutenant Colonel Peter Murray Kerr, who took the M.B. and C.M. at Edinburgh in 1887, and is Surgeon to the Dumfries and Galloway Royal Infirmary. Three of the Captains are medical men, Ernest Smitz, Ford, who took the Scottish triple qualification in 1902, served as a Civil Surgeon in the South African war with the Fifth Division of the Natal Field Force, gaining the medal with five clasps, and is now in practice at Castle Douglas; Alford William Anderson, of Dalbeattie, who is M.B., C.M., Edinburgh, 1891, M.D., 1909, and J. J. Dykes, who took the L.D.S. of the Edinburgh College in 1907, and the triple qualification in 1911, and is Dental Surgeon to the Dumfries Infirmary. The two medical officers of the battalion are Dr George Robert Livingston, M.B., C.M., 1893, M.B., 1901 of Edinburgh, Surgeon to the Dumfries Infirmary, and Dr John Saffey, of Annan, who took the M.B., Ch.B., at Edinburgh in 1904, and was subsequently House Surgeon of the Salop Infirmary at Shrewsbury.

It has been decided that the sick and wounded Indian soldiers of the Indian contingent shall be transferred to England, instead of conveying them from the hospitals of the army to a subsidiary hospital at Marseilles, and thence to Alexandria. A hospital will be established in the west of England, probably in Devonshire. Temporary arrangements were made for their reception at Netley, and the opportunity has been taken of employing there part of the Indian Field Ambulance Training Corps, lately embodied in London under the command of Lieutenant Colonel R. J. Baker, Bombay Medical Service, retired. Thirty men, under the command of Lieutenant Colonel E. Shannan, Madras Medical Service, retired, joined Netley Hospital for duty on 19th October. A further small detachment has been employed on the hospital ships carrying the Indian wounded across the Channel. Lieutenant Colonel W. G. Alpine, Bengal Medical Service, retired, who is in practice at Baling is or recently was, serving on one of the hospital ships. Surgeon General Sir Richard Havelock Charles, G.C.V.O., Bengal Medical Service, retired, President of the India Office Medical Board, and Sir Trevielyn Wynne, Vice Chairman of the Indian Committee of the St. John's Ambulance Association, visited France in October, to investigate the distribution of comforts for the Indian troops to the best advantage.

THE services of Major L. E. Gilbert, I.M.S. are replaced at the disposal of the Government of India in the Home Department.

SENIOR MILITARY ASSISTANT SURGEON AND HONORARY LIEUTENANT P. McCARTHY, Civil Surgeon, Pegu, is appointed to be Civil Surgeon, Akyab as a temporary measure, in place of Major L. E. Gilbert, I.M.S., whose services have been replaced at the disposal of the Government of India.

CIVIL ASSISTANT SURGEON MAUNG SHWE GE is appointed to officiate as Civil Surgeon, Pegu, as a temporary measure, in place of Senior Military Assistant Surgeon and Honorary Lieutenant P. McCarthy, transferred.

LIEUTENANT COLONEL J. ENTRICAN, I.M.S., is recalled to duty before the expiry of his leave, and is appointed to be Civil Surgeon, Moulmein, in place of Captain H. S. Matson, I.M.S., transferred.

ON relief by Lieutenant-Colonel J. Entrican, I.M.S. Captain H. S. Matson, I.M.S., is appointed to be Civil Assistant Surgeon Maung Shwe Ge.

ON relief by Captain R. Kelsall, I.M.S. Captain S. T. Crump, I.M.S., officiating Superintendent of Insein Central Hospital, is appointed to be House Surgeon, Rangoon General Hospital, as a temporary measure.

THE services of Captain F. P. Weinicke, M.B., Ch.B., I.M.S. of the Government of India, Army Department, with effect from the 6th October 1914.

Orders Nos. 1811 and 1812, dated the 29th September 1914, are hereby cancelled.

SECOND Grade Civil Assistant Surgeon Daniel John, M.B., Assistant to the Civil Surgeon, Amraoti, is appointed to officiate temporarily as Civil Surgeon, Nimal.

Under Section 6 of the Prisons Act, 1894, the Chief Commissioner is pleased to appoint Civil Assistant Surgeon

Daniel John, M.B., Officiating Civil Surgeon, Nimal, to the executive and medical charge of the Nimal District Jail.

Under the provisions of paragraph 10 of the Army Regulations, India, Volume IX, the name of Major A. G. M. Lenten, M.B., I.M.S., Medical Officer, Panjab Volunteer Rifle Corps, is placed on the supernumerary list, with effect from the 18th September 1914.

MAJOR J. H. HOGG, I.M.S., is appointed Veterinary Surgeon in Kashmir from 26th Sept., 1914.

MAJOR E. F. WILSON, I.M.S., is posted to the Mount Pat Corps from 30th Sept., 1914.

THE services of Captain H. A. H. Falcon, I.M.S., are placed temporarily at the disposal of the Government of the Punjab, with effect from the 2nd Sept. 1914.

THE services of the undermentioned officers are placed temporarily at the disposal of His Excellency the Commander-in-Chief in India —

Lieutenant Colonel W. G. Pridmore, I.M.S.,
Major J. Good, I.M.S.,
Major A. Lenten, M.B., I.M.S.,
Major L. A. Walker, I.M.S.,
Captain W. S. Neale, I.M.S.,
Captain C. H. Fielding, I.M.S.,
Major H. Middle Smith, I.M.S.,
Major J. A. J. Parmenter, I.M.S.,
Captain A. H. Proctor, I.M.S.,
Captain E. B. Munro, I.M.S.,
Captain G. A. Gordon, I.M.S.,
Captain V. B. Green Armstrong, I.M.S.,
Captain A. A. C. McNeill, I.M.S.,
Captain G. R. O'Brien, I.M.S.,
Captain C. Newcomb, I.M.S.,

We are glad to learn that the son of Lt. Col. Galtier I.M.S., ret'd, who was reported killed in Belgium, is still alive, but seriously wounded and in the hands of the Allies.

MAJOR J. MCPHILIPSON, I.M.S. is posted New Army Service Bushire, from October 1914.

We note in Gazette of India that Military Agent and Agent F. G. Bernard, I.M.S., died at Orleans in France on 22nd October 1914.

THE services of the following Indian Medical Service officers are replaced at the disposal of the Government of India, Army Department, with effect from the 6th Oct., 1914, relinquishing charge of their present duties —

Captain C. L. Palmer and J. M. Macrae, Major J. F. Clements and Lieutenant Colonel C. B. Peart, members of central prisons and Majors W. S. Willmott, J. A. Walker and N. S. Wells, civil surgeons.

THE services of Major J. D. Graham, I.M.S., medical officer, United Provinces and Major W. L. McKechnie, I.M.S., civil surgeon, Jhansi, are replaced at the disposal of the Government of India, Army Department, with effect from the date they are relinquishing charge of their duties.

In consequence of mobilization, the services of Major C. E. Southon, I.M.S., officiating Chief Plague Medical Officer, Punjab, are replaced temporarily at the disposal of the Government of India, Education Department, with effect from the afternoon of the 24th September 1914.

In consequence of mobilization, the services of under mentioned officers are replaced temporarily at the disposal of the Government of India, Home Department, with effect from the dates noted against their names —

Lieutenant Colonel R. Head, I.M.S., Professor of Midwifery Medical College, Lahore—17th September 1914 (forenoon).
Major S. H. Lee Abbott, I.M.S., Civil Surgeon, Multan—17th September 1914 (afternoon).

Captain G. S. Husband, I.M.S., officiating Civil Surgeon, Ferozepore—15th September 1914 (forenoon).

THE services of Major S. P. James, M.D., I.M.S., Assistant Director General, Indian Medical Service (Sanitary), are placed temporarily at the disposal of the Chief Commissioner of Assam

MAJOR F. N. WHITI, M.D., I.M.S., Officiating Assistant Director General, Indian Medical Service (Sanitary), is appointed substantially to that post. Major James's ban upon the appointment being suspended under article 89 of the Civil Service Regulations on his transfer to special duty in Assam.

THE services of the undermentioned officers are placed temporarily at the disposal of His Excellency the Commander in Chief in India —

Major T H Gloster, M.B., I.M.S.
Captain J Taylor, M.D., I.M.S.

SURGEON GENERAL TOM GRAINGER, I.M.S., has been awarded the Good Service Pension from 2nd April 1914 (*Vice Col R N Campbell, I.M.S., 1sttd*), to be held till retirement —

Commissions

Surgeon (ranking with Lieutenant), 1st October 1885
Surgeon (ranking with Captain), 1st October 1885
Lieutenant Colonel, 20th May 1898
Colonel, 3rd December 1909
Surgeon General, 25th May 1914

Appointments

Arrived in India, 27th April 1886
General duty, Allahabad, 29th April 1886 to 5th June 1886
Attached 23rd Pioneers, 6th June 1886 to 12th August 1886
Officiating Medical charge, 40th Bombay Infantry, 13th August 1886 to 7th January 1887

Attached, 38th Bombay Infantry, 8th January 1887 to 17th April 1887

Officiating Medical charge, 4th Bombay Infantry, 18th April 1887 to 27th February 1888

Attached Field Hospital, Sikkim Field Force, 28th February 1888 to 31st August 1889

Medical charge, 32nd Pioneers, 1st September 1889 to 28th May 1892

Officiating Civil Surgeon, Chumparun, 29th May 1892 to 17th December 1894

Officiating Civil Surgeon, Noakhali, 18th December 1894 to 31st December 1894

Civil Surgeon, Khulna, 1st January 1895 to 31st December 1897

Attached, No 43 Native Field Hospital, Tukah Expeditionary Force, 1st January 1898 to 9th April 1898

Officiating Civil Surgeon, Chumparun, 10th April 1898 to 22nd September 1900

Officiating Civil Surgeon, Motihari, 23rd September 1900 to 31st December 1900

Civil Surgeon, Chumparun, 1st January 1901 to 1st February 1901

Civil Surgeon, Dharbanga, 2nd February 1901 to 30th April 1901

Civil Surgeon, Muashedabad, 1st May 1901 to 31st December 1902

Civil Surgeon, Dharbanga, 1st January 1903 to 25th December 1904

Officiating Civil Surgeon, Mozaifai pore, 25th December 1904 to 17th June 1908

Officiating Principal Medical Officer, Kohat Bugade, 18th June 1908 to 18th October 1908

Civil Surgeon, Mozaifai pore, 19th October 1908 to 1st August 1909

Officiating Principal Medical Officer, Burma Division, 2nd August 1909 to 2nd December 1909

Principal Medical Officer, Burma Division, 3rd August 1909 to 31st December 1911

Assistant Director of Medical Services, 6th (Mhow) Division, 1st January 1912 to 30th April 1914

Officiating Deputy Director, Medical Services, 2nd (Rawalpindi) Division, 1st May 1914

War services and rewards

Sikhs Expedition, 1888 — Medal with clasp

Hazara Expedition, 1891 — Clasp

Tirah, 1897-98 — Action at Daigui. Capture of the Samprigha and Arhingri Passes. Operations in the Bara Valley, 7th to 14th December 1899. Despatches, London Gazette, 5th April 1898. Promoted Surgeon Lieutenant Colonel — Medal with two clasps

C B, 20th June 1911

FROM THE 25TH MAY 1914 IN THE ROOM OF SURGEON GENERAL A M CROFTS, C.I.E., I.M.S., RETD
SURGEON GENERAL G F A HARRIS, C.S.I., K.H.S., I.M.S

Commissions

Surgeon (ranking with Lieutenant), 30th September 1878
Major, 30th September 1890
Lieutenant Colonel, 30th September 1898
Colonel, 1st March 1910
Surgeon General, 1st April 1912

Appointments

Arrived in India, 6th April 1879
General duty, Allahabad, 8th April 1879 to 5th May 1879
Civil Surgeon and Superintendent, Jail, Hardoi, 6th May 1879 to 14th September 1879

Officiating Medical charge, 16th Bengal Infantry, 15th September 1879 to 20th September 1879
General duty, Jhansi, 21st September 1879 to 31st December 1879

Officiating Medical Charge, 16th Bengal Infantry, 1st January 1880 to 30th January 1881
Officiating Medical charge, 14th Madras Infantry, 31st January 1881 to 17th December 1881

Civil Surgeon, Barisil, 18th December 1881 to 18th March 1882

Officiating 2nd and 1st Residency Surgeon, General Hospital, Calcutta, 19th March 1882 to 7th April 1883

Second Residency Surgeon General Hospital, Calcutta, 8th April 1883 to 30th September 1885

Officiating, Joint Civil Surgeon, Simla, and Medical charge, Army Headquarters Staff, 1st October 1885 to 31st December 1885

Joint Civil Surgeon, Simla, 1st January 1886 to 31st November 1890

Civil Surgeon and Superintendent, Lunatic Asylum, Nagpur, 4th November 1890 to 4th June 1898

Officiating Principal Professor of Medicine, Medical College, Calcutta, 15th June 1898 to 20th February 1900

Civil Surgeon and Superintendent, Lunatic Asylum, Nagpur, 21st February 1900 to 27th May 1900

Officiating second Physician, Medical College, Calcutta, 28th May 1900 to 31st December 1900

Professor of Materia Medica and Clinical Medicine and Second Physician, Medical College, Calcutta, 1st January 1901 to 6th August 1903

(Appointed Honorary Surgeon to His Excellency the Viceroy, 15th September 1909)

Officiating Inspector General Civil Hospital, Punjab, from July 1908 to November 1908

Officiating Inspector General, Civil Hospitals, United Provinces, 7th August 1909 to 31st December 1909

Inspector General, Civil Hospitals, United Provinces, 1st January 1910 to 28th February 1910

Inspector General, Civil Hospitals, Bengal, 1st March 1910

War services and rewards *

Afghan War, 1880 — Medal
C S I, 12th December 1911

THE record of Surgeon General Hairis' services as given in the *Gazette of India* is obviously incorrect in certain details, some of which we have corrected above

SECOND CLASS MILITARY ASSISTANT SURGEON L McCURTIS, Deputy Superintendent, European Lunatic Asylum, Bhowanipur, acted as Superintendent, Prince Albert Victor Asylum for Lepers, Gobla, from the 14th to the 18th August 1911, both days inclusive, vice Honorary Lieutenant H Mansfield, I.M.S.

THE services of the following officers are replaced at the disposal of the Government of India in the Home Department, with effect from the dates noted against their names —

1 Captain J D Sandes I.M.S	Afternoon of 10th August 1914
2 " A H Proctor, I.M.S	Afternoon of 11th August 1914
3 " E B Munro I.M.S	Afternoon of 12th August 1914
4 Major H Emslie Smith, I.M.S	Afternoon of 13th August 1914
5 Captain C A Godson, I.M.S	Afternoon of 13th August 1914
6 " V B Green Amytage, I.M.S	14th August 1914
7 " A A C McNeil, I.M.S	Afternoon of 14th August 1914
8 Major F A F Barnardo, I.M.S	Afternoon of 15th August 1914

THE services of Captain C R O'Brien, I.M.S., are placed temporarily at the disposal of the Government of India in the Home Department, with effect from the afternoon of the 14th August 1914

ASSISTANT SURGEON AMBICA CHARAN DUTT made over charge of the Chittagong Jail to Lieutenant-Colonel H S Wood, I.M.S., on the afternoon of the 12th September 1914

LIEUTENANT COLONEL H S WOOD, I.M.S., made over charge of the Chittagong Jail to Assistant-Surgeon Dutt on the afternoon of the 16th September 1914

* Also appointed in *London Gazette* of 18th October as Honorary Surgeon to the King

SERVICE NOTES.

DEC., 1914.]

RAJ BAHADUR BARADA KANTA ROY, Officiating Civil Surgeon, made over charge of the Sambalpur Jail to Captain R Brown, I M S, M D, in the forenoon of the 16th September 1914

BABU RAJENDRA NATH CHAKRABARTTI, Assistant Surgeon, made over charge of the Darbhanga Jail to Major M. H. Thorley, I M S, in the afternoon of the 10th September 1914

BABU SHARAT CHANDRA SUR, 1st grade Assistant Surgeon, made over charge of the Puri Jail to Major V E H Lande, I M S, in the forenoon of the 9th September 1914

BABU CHANDRA KANTA CHAKRABARTTI, Assistant Surgeon, made over charge of the Chapra Jail to Major T H. Delany, M D, F R C S I, I M S, in the forenoon of the 11th September 1914

MAJOR F H WATLING, M D, I M S, made over charge of the Burdwan Central Jail to Manly M A Salam, Senior Sub-Deputy Magistrate, in the forenoon of the 22nd September 1914

CAPTAIN W. GILLITT, M D, D P H, I M S, made over charge of the Bhagalpur Central Jail to Lieutenant Colonel J C S Vaughan, M B (Edin), I M S, in the afternoon of the 24th September 1914

MAJOR J W D MEGAW, M B, R U I, I M S, made over charge of the Monghyr Jail to Babu Binod Bharti Ghoshal, Assistant Surgeon, in the forenoon of the 1st October, 1914, on his transfer to Lucknow

LIEUTENANT COLONEL W B LANE, I M S, whose services have been replaced at the disposal of the Administration, is reposted as Inspector General of Prisons, Central Provinces

On relief by Lieutenant Colonel W B Lane, I M S, Major C H Bensley, M R C S, L R C P, I M S, Officiating Inspector General of Prisons, Central Provinces, is reposted as Superintendent, Central Jail, Nagpur

Under Section 6 of the Prisons Act, 1894, the Chief Commissioner is pleased to appoint Major C H Bensley, M R C S, L R C P, I M S, Superintendent, Central Jail, Nagpur, to the executive and medical charge of that Jail

On relief by Major C H Bensley, M R C S, L R C P, I M S, Major F O N Mell, M B, C M, I M S, Superintendent, Central Jail, Nagpur, is transferred in the same capacity to Jubbulpore

Under Section 6 of the Prisons Act, 1894, the Chief Commissioner is pleased to appoint Major A M Fleming, M B C C S, M F R, I M S, Civil Surgeon, Jubbulpore, to the medical charge of the Central Jail, Jubbulpore, vice Captain W J Powell, M B, B Ch, B A O, L M, D P H, I M S reverted to Military duty

The services of Captain W J Powell, M B, B Ch, B A O, L M, D P H, I M S, Officiating Superintendent, Central Jail, Jubbulpore, are replaced at the disposal of the Government of India, Army Department, with effect from the date he hands over charge

On relief by Civil Assistant Surgeon Muhammad Ali, I M & S, Captain F P Wernicke, M B, C M, I M S, Officiating Civil Surgeon, Seoni, is transferred in the same capacity to the Nimar District, vice Captain W Tarr, M D, I M S, deputed to Military duty

The services of Captain M F Reaney, M B, D P H, M R C S, L R C P, I M S, Civil Surgeon, Chanda, are placed at the disposal of the Government of India, Army Department, with effect from the date he hands over charge

SENIOR GRADE CIVIL ASSISTANT SURGEON LAKSHMI NARAYAN CHAUDHRI, I M & S, in charge of the Main Hospital, Saugor, is appointed to officiate temporarily as Civil Surgeon, Chanda, vice Captain M F Reaney, M B, D P H, M R C S, L P, I M S, deputed to Military duty

MAJOR P F CHAPMAN, M B, C M, I M S, Civil Surgeon and Superintendent, Lunatic Asylum, Nagpur, is appointed Superintendent of the Medical School at Nagpur, in addition to his own duties, with effect from the 1st July 1914

MAJOR N E H SCOTT, I M S, Reciprocity Surgeon, Baghdad, is appointed temporarily to hold charge of the current duties of the office of Political Resident in Turkish

Arabia and His Britannic Majesty's Consul General, Baghdad, in addition to his own duties, with effect from the 25th June, 1914, and until further orders

MAJOR G. D. FRANNIS, Indian Medical Service, an Agency Surgeon of the 2nd class, is posted as Agency Surgeon, Southern States of Central India, with effect from the 6th September 1914

LIEUTENANT COLONEL J. N. MAGLEON, C I R, Indian Medical Service (Bengal), an Agency Surgeon of the 2nd class, on return from leave, was posted temporarily as Agency Surgeon, Bundelkhand, with effect from the 11th September 1913

LIEUTENANT COLONEL P. B. HAIG, Indian Medical Service (Bengal), an Agency Surgeon of the 2nd class, on return from leave, was posted temporarily as Agency Surgeon, Dhopur, with effect from the 13th September 1914

The services of Major R. F Baird, I M S, Civil Surgeon, Muttra, and of Captain G. Holroyd, I M S, on plague duty, Benares, are replaced at the disposal of the Government of India, Army department, with effect from the dates on which they relinquished charge of their duties

The services of Military Assistant Surgeons H. J. J. Garrod, I M S, Civil Surgeon, Etah, and A. T. Chaudhury, I M S, assistant to the Civil Surgeon, Mussoorie, are replaced at the disposal of the Government of India, Army department, with effect from the dates on which they relinquished charge of their duties

MAJOR E. J. O'MIARA, I M S, Civil Surgeon and Principal, Medical School, Agra, has been granted by His Majesty's Secretary of State for India permission to return to duty

CIVIL ASSISTANT SURGEON HARI RAM VARMA attached to the Sadi Dispensary, Muttra, to hold civil medical charge of that district, in addition to his own duties, vice Major R. F Baird, I M S, reverted to military duty

MAJOR W H McKENNA, I M S, Civil Surgeon, was on study leave from the 16th February to the 19th July 1914

The Civil Surgeon of Aligarh to hold visiting medical charge of the Mitali district, vice Major R. F Baird, I M S, reverted to military duty

The undermentioned 1st Class Assistant Surgeons, having completed five years' service in that class, to be 3rd Class Assistant-Surgeons, with effect from the 1st September 1914 —

Arthur Frederic Joseph D'Arcy, Harold Bartholomew Blaker, William St Albans Hendricks, Arthur Elroy Lewis, and Samuel Stanhope Graynor.

The undermentioned 2nd Class Assistant Surgeons, having completed seven years' service in that class, to be 1st Class Assistant Surgeons, with effect from the 18th September 1914 —

William Ernest Kirkpatrick (Supernumerary 1st Class), Hugh Alexander Poynz, and Alfred Baldwin De Souza

The King has approved the admission of the undermentioned gentlemen to the Indian Medical Service —

To be Lieutenants, I M S

Dated, 1st August 1914

John Walter Pigeon, Maurice Lawrence Preston Peter Vieira, M B, Bhakti Mohan Mitra, Philip Seunge Thomas Bond Paul, Amrit Chand, M B, Robert Leo, M B, Nilkanth Shriram Jatar, Tadepally Sankara Sastry, Jamal ud din M B, Farozeshah Bapuji Chenoy, Sadanala Krishnam Venugopal, Charles de Carteret Martin, M B, Joseph Henry Smith, M B

The following promotions are made, subject to His Majesty's approval —

Captains to be Majors	
Arthur Tregelles Pridham, M B	
John O'Leary, M B	
George Adam Jolly, M B, F R C S E	
Abdulrahman Khan Liuddie, M B	
Cuthbert Lindsay Dunn	
William Henry Odium	
Raghuber Dayal Saigol, F R C S R	
Cecil Edward Bulteel	
John Lumsden Lanham, M B, F R C S I	
Friederick Colin Rogers	
Clayton Alexander Francis Hingston	

1st Sept 1914

THE following persons are appointed to be Temporary Civil Assistant-Surgeons in Burma, with effect from the dates on which they assume charge of their duties —

- Mr Narasimhpurasad A Basu, L M & S (Bom)
- Mr Brij Lal Mehra, M B, B S (Pun)
- Mr Ram Narain Sod, M B B S (Pun)
- Mr Guddas Ram Vohra, L R C P & S (Edin), L F P & S (Glas), D P H (Edin) L M (Dub)
- Mr Haigovinddas Dhanji Shah, L M & S (Bom)

LIEUTENANT COLONEL R C MACWATT, Indian Medical Service (Bengal), an Agency Surgeon of the 2nd class is appointed to officiate as an Agency Surgeon of the 1st class and as Civil Surgeon, Ajmer, and Chief Medical Officer in Rajputana, with effect from the 21st September 1914, and until further orders.

MAJOR F D S FAIRER, Indian Medical Service, an officiating Agency Surgeon of the 2nd class, on return from leave, is posted as Residency Surgeon, Gwalior, with effect from the 14th September 1914.

CAPTAIN H W ACTON, I M S, is placed on special duty under the orders of the Director General, Indian Medical Service.

CAPTAIN A H NAPIER M B, I M S, held a sub *pro tempore* appointment in the Bacteriological Department from the 29th May to the 11th August 1914 (both days inclusive).

CAPTAIN ROBERT LONG GAMLEN, M D, Temporary Half Pay List, has been permitted by the Most Hon'ble the Secretary of State for India, to retire from the service, subject to His Majesty's approval, with effect from the 28th August 1914.

MAJOR C B McCONAGHY, Indian Medical Service, an Agency Surgeon of the 2nd class, is posted as Civil Surgeon, Dera Ismail Khan, with effect from the 12th September 1914.

CIVIL ASSISTANT SURGEON GOKUL PRASAD TIWARI attached to the Sadar Dispensary Jhansi to hold civil medical charge of that district in addition to his own duties, vice Major Steen, I M S, reverted to military duty.

THE Civil Surgeon, Cawnpore, to hold visiting medical charge of the Jhansi district, vice Major Steen, I M S, reverted to military duty.

THE services of the following Military Assistant Surgeons are placed temporarily at the disposal of the Director General Indian Medical Service, with effect from the dates noted against their names —

- (1) First class Military Assistant Surgeon J G T Matthews, 21st August 1914
- (2) Second class Military Assistant Surgeon C W Maine, 17th August 1914
- (3) Second class Military Assistant Surgeon A B Cornelius, 18th August 1914
- (4) Second class Military Assistant Surgeon A P Lopez, 24th August 1914
- (5) Second class Military Assistant Surgeon F X Mendis, 10th September 1914
- (6) Second class Military Assistant Surgeon L McCutts, 19th August 1914
- (7) Second class Military Assistant Surgeon A Holehouse, 17th August 1914
- (8) Second class Military Assistant-Surgeon F G Huist, 17th August 1914
- (9) Second class Military Assistant Surgeon C G deGruyter, 18th August 1914
- (10) Third class Military Assistant Surgeon W G H Warner, 8th September 1914
- (11) Third class Military Assistant Surgeon R Clarkson, 11th September 1914
- (12) Third class Military Assistant Surgeon A D Campbell, 18th August 1914
- (13) Third grade Military Assistant Surgeon P S Bedell, 21st August 1914

THE services of the third class Military Assistant Surgeon H C Powles are replaced at the disposal of the Director General Indian Medical Service, with effect from the 18th August 1914.

BABU BIJITENDRA BASU, L M S, a passed student of the Medical College, Calcutta is temporarily admitted into the service of Government as an Assistant Surgeon, with effect from the 9th September 1914.

MAJOR H INNES, I M S, on being recalled from leave, is appointed as Civil Surgeon, Kamrup, with effect from the forenoon of the 10th September 1914.

ON being relieved by Major H Innes, I M S, Captain S C Chuckiebutty, I M S, Officiating Civil Surgeon, Kamrup, is appointed to officiate as Civil Surgeon, North East Frontier.

MAJOR A LEVENTON, I M S, on being recalled from leave, is reappointed as Civil Surgeon, Lakhimpur, with effect from the afternoon of the 12th September 1914.

THE services of Captain A Denham White, I M S, Officiating Civil Surgeon, Lakhimpur, are replaced at the disposal of the Government of Bengal, with effect from the date of his relief.

HIS Excellency the Governor in Council is pleased to appoint Captain A F Hamilton, M B (Lond), F R C S, I M S, on return from leave, to resume charge of his appointment of Acting Assistant to the Civil Surgeon, Poona.

HIS Excellency the Governor of Bombay in Council is pleased to make the following appointments pending further orders —

Assistant-Surgeon P A Coedero, L M & S, to act as Civil Surgeon, Dhulia, vice Captain H S Hutchison, M B (Glas), B Sc (Glas), I M S.

Assistant Surgeon Rao Saheb Vishwanath Narayan Rege, L M & S, to act as Civil Surgeon, Surat, vice Captain J L Lunham, M B, B Ch (R U I), D T M (Cant), I M S.

Captain F Shingleton Smith, I M S, to act as Civil Surgeon, Belgaum, in addition to his own duties, vice Major W M Houston, M B, B Ch (Dub), D P H (Dub), D T M (Liverpool), I M S.

MAJOR T C McCOMBIE YOUNG, I M S, on being recalled from leave, is reappointed as Deputy Sanitary Commissioner, Assam.

THE services of Captain J F James, I M S, Officiating Sanitary Commissioner, Assam, are placed temporarily at the disposal of the Military Department, with effect from the date of his relief.

Notice.

SCIENTIFIC Articles and Notes of interest to the Profession in India are solicited. Contributors of Original Articles will receive 25 Reprints gratis, if requested.

Communications on Editorial Matters, Articles, Letters and Books for Review should be addressed to THE EDITOR, *The Indian Medical Gazette*, c/o Messrs Thacker, Spink & Co, Calcutta.

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BOOKS, REPORTS, &c, RECEIVED —

- Ward's Bedside Haematology W B Saunders & Co
- Thomson's Treatise on Clinical Medicine W B Saunders & Co
- Hayes' Treatment of Syphilis, &c Baillière, Tindall & Cox
- Goulston's Case Sugar and Heart Disease Baillière, Tindall & Cox
- Marshall's Syphilis, 3rd Ed 10s 6d Baillière, Tindall & Cox
- Brown's Physiological Principles in Treatment Price, 5s Baillière Tindall & Cox
- W A Muirhead's Practical Tropical Hygiene 10s 6d J Murray
- Stewart's Physiology 7th Ed 18s Baillière, Tindall & Cox
- Sir J Oliver's Lead Poisoning 5s H K Lewis
- Stephen Paget's Pasteur and after Pasteur 3s 6d A G Black
- Col Waddell's Lyons' Medical Jurisprudence (5th Ed) Thacker, Spink & Co
- The Indian Museum, 1814—1914
- G W Disney's Sanitation of Indian Bazaars, 3rd Ed Thacker, Spink & Co
- R Bhattacharji's Helps to Materia Medica Price Re 14 H Muljor & Co, Calcutta
- Lejar's Urgent Surgery Vol I Wright & Co, Bristol
- Murphy's Clinic Vol III No 8 W B Saunders & Co
- Fidel's Obiter Scripta 2s 6d J Wright & Son

LETTERS, COMMUNICATIONS, &c, RECEIVED FROM —

- Lt Col H Smith, I M S, Amritsar, Sir Leonard Rogers, Calcutta
- Capt Hugh Stott, I M S, Ootacamund, Capt V Nesfield, I M S, Dr Dowden, Kuala Lumpur Dr McCombie, Assam, Major Knapp I M S, Rangoon, Major F P Connor I M S, Karachi, Major E O Thurston I M S, Bombay, Dr Hatteejee Calcutta, Dr R Bhattacharji, Calcutta
- Capt A Gill, I M S Lahore, Lt Col J B Smith, I M S, Poona, Lt Col F P Maynard, Calcutta, Colonel B Seton, I M S, Simla

